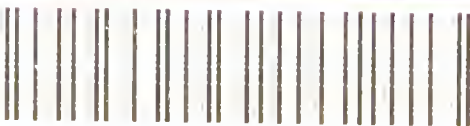


PRACTICAL MOTHERHOOD

HELEN Y. CAMPBELL



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PRACTICAL MOTHERHOOD



BY

HELEN Y. CAMPBELL

L.R.C.P. AND S. EDIN. ; L.F.P. AND S. GLAS.

WITH ILLUSTRATIONS

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TO

MY MOTHER

THE DEAREST OF ALL MOTHERS

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P R E F A C E

THE writing of this book and its addition to the list of handbooks already published for the use of mothers was originally the outcome of a suggestion to embody in some more permanent form the sheets of notes on the management of pregnancy, feeding of infants, &c. which I have been in the habit of issuing, I believe with success, to mothers in the course of my practice; and I have endeavoured to include in it such hints as may make it a ready help and really practical guide to mothers in England and the Colonies in the care and training of children, and also in the correct management of pregnancy.

The question of artificial feeding as applied to the healthy infant, I have dealt with as fully and as simply and practically as possible. We are, I think, a little too much inclined to think of infant feeding as a side branch of medicine; forgetting that its practical application in all normal cases must inevitably belong to mothers. I have been struck, in practice, by the number of educated women who have really wished to understand this subject, and also by the facility with which misconceived ideas and the many existing popular prejudices relating to it were dispelled when explanations were given. Writers on pediatrics sometimes suggest that it is the duty of the general practitioner to educate the mother in regard to the feeding of her infant, but this actually takes more time than the busy practitioner can spare, since it must necessarily involve written instructions to cover the whole period of the child's infancy. The nourishment suitable for the infant at three weeks old will not be suitable a few months later, and it has been my experience to find babies still being fed on the weak mixtures medically prescribed many months earlier.

I am of opinion that the practical knowledge which we owe to the work of our several pediatricists in so far as it concerns the feeding of the *healthy* infant should belong to every mother, and that if its

essentials were universally realised difficult feeding cases would be much more rare. The falling-off of breast-fed infants, or first signs of indigestion at the weaning period, is a common experience in practice, like the chronic indigestion and disordered nutrition due to improper feeding of older children. For all these reasons it seems to me that a sound knowledge, not only of the proper management of lactation and of the suitable feeding of older children, but of the *essential points of infant nutrition* and its relation when imperfect not only to premature death but to the survival of unhappy, fretful babies with enfeebled constitutions and irritable nervous systems, is more essential perhaps to the mother than any other consideration of nursery management. Under this heading I have included the essential points concerning a pure and suitable milk supply, and its relation to the preservation of infant life; the correct modification and use of cow's milk, and the disadvantages and dangers incidental to rearing a child entirely on patent foods; and those more general lines upon which mothers may best manage hand-feeding, where, in the absence of illness, such is a difficulty. And I have entered as fully as possible into the arrangement of the dietary during the first six years.

Believing that the book would serve a more useful purpose if it included the care of the sick as well as the healthy child, I have tried to convey the importance of the early recognition of commencing illness and the significance of certain symptoms essentially requiring medical care; and I have described, remembering especially those mothers in the Colonies who live often at some distance from a doctor and out of easy reach of trained help, the ordinary principles of the nursing of sick children. And I have also included in the course of the book such elementary physiological facts as appeared to me necessary to the clear understanding of the subject.

The field of child care is a wide one, for besides an acquaintance with the normal development of child life, we are beginning to realise that not only the dietary and the dress and all those hygienic principles involved in the maintenance of perfect bodily health and growth, but also the "opening mind of childhood," must be governed by definite and special knowledge on the part of those who have to deal with this interesting and fascinating undeveloped human material, and not left to chance instinct or affection or the old-fashioned rule-of-thumb methods of training.

To Froebel, and those who have written on and explained his great philosophy to us, and to Darwin and later writers on evolution who have given us a scientific basis for the development of a child's mind, we owe the most fruitful seeds of the study of the psychology of the child and the correct training of its mind. And now that child literature is so voluminous, and that societies, comprising mothers, medical men and women, and teachers, which have for their object child study, have been added to other sociological associations in England and different parts of the world, one may, encouraged by the trend of modern thought, hope for a time in the not far distant future when the study of children and their care will find an important place in the *education* of every woman of every class; and when special training-schools for children's nurses are organised, not only in London but in all our big towns, on the lines of that attached to the Babies' Hospital in New York.

The question of child care is an old one, yet it was never more new than to-day, I think, in the light of the clearer understanding of it which we owe to the advance of science and to a more cultured womanhood. It is also by far the most important Woman's Question of the day, in that it must inevitably lie to a great extent at the root of those other much-discussed problems of Physical Degeneracy, Social Morality, and the National Welfare and Progress generally, for it is a well-known fact that the vast majority of children are born healthy, and that even delicate babies may often be reared into perfectly healthy adults; and in the hands of mothers lies the all-important task of the first education of the child, in the wider sense of the word: "As the child is, so is the man," and "Give imagination its fleetest and strongest wing, it can never conceive a task so well worth the doing."

In view of the great importance of the subject, my first and ruling principle in the writing of the book has been to remember those to whom it is addressed. And my first aim, in so far as space would allow, has been to make it entirely practical, because I have felt that only so can it be of any real service to those who bear the "gravest of all responsibilities," though also the sweetest—the bringing up of a little child.

In conclusion, I must express my great obligation to my friend and colleague, Dr. Anne F. Cleaver, for her invaluable assistance with the subject-matter of the book; to Dr. E. N. Burnett for his

helpful criticism and suggestion and careful revision of the proofs ; and to my brother, Clifford Campbell, for his help with the secretarial work it has involved.

I have also to tender my sincere thanks to Mr. R. L. Esson of Johannesburg, at whose suggestion the book was undertaken, for his kindly assistance and cordial co-operation in reference to its production ; and to Dr. E. P. Baumann, who read the original manuscripts.

H. Y. C.

LONDON, *October* 1910.

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PART I

THE HYGIENE OF PREGNANCY, INFANCY, AND CHILDHOOD



PRACTICAL MOTHERHOOD

CHAPTER I

PREGNANCY

“Is there a state more blessed than that of Pregnancy? To do everything we do in the silent belief that it must needs benefit that which is generating in us? That it must raise its mysterious worth, the thought of which fills us with ecstasy? . . . We refrain from much . . . we suppress an angry word . . . we shrink from our own harshness . . . as though it might instil a drop of evil into the life-chalice of the beloved unknown . . . ‘A greater than we are is coming to life,’ such is our secret hope: for him we prepare everything, that he may successfully come to light: not only all that is useful, but also the crowning love of our souls.”—FRIEDRICH NIETZSCHE, *The Dawn of Day*, Fifth Book.

PREGNANCY is the first chapter in the narrative of a child's life and history, though these are as yet inseparable from those of its mother. Its life commences with its conception, and is unfolded and nurtured during this period until it is sufficiently mature for separate existence.

Since the child's first physical development takes place during this time, and the first lines are laid down upon which all its functions will be organised, this period is one of very great importance.

Signs of Pregnancy.—The first and most constant sign of the existence of pregnancy is the cessation of the monthly flow, and therefore if a young wife in whom this has hitherto occurred regularly misses a period, she should always suspect the probability of pregnancy. She should not in any way attempt to bring on the flow, and should order her life quietly, and avoid with especial care those possible causes of miscarriage mentioned on p. 26. If she misses two more periods, and experiences some degree of nausea or sickness, especially on first rising in the morning, and also sensations of tender fulness and tingling in the breasts, similar to those which in many women precede the monthly period, she may feel

more certainty, and will be well advised to visit and place herself in the care of a physician in whose skill and sympathy she feels she has complete confidence.

She may reckon the approximate date at which to expect the child by consulting the Obstetric Table on the opposite page. The columns in the table read from left to right. Taking the date of the first day of her last monthly period she should find it in the upper row of figures in the columns; the date immediately below this figure in the column gives the approximate date of birth.

The nurse should be engaged soon after the doctor. It is important that the mother should like her; that she should have received a thorough training in her particular duties; and, if the mother has engaged her on her own responsibility, that the doctor should have had an interview with her before final arrangements are concluded. This is very essential, and as much in the interests of the mother herself as of the doctor, and will be understood and readily acquiesced in, as also to her own advantage, by a competent and conscientious nurse.

Pregnancy is a normal bodily function, and in no sense a malady. It is important to realise this, and that healthy women who live healthily should be as well during pregnancy as at any other time. Many of us do not live hygienically, especially as regards our diet and supply of fresh air, partly owing to ignorance and partly to the fact that we drift and do not trouble about these considerations unless unfavourable symptoms call our attention to an unhygienic mode of life. Many women feel better during their pregnancies than ever before in their lives, merely because for the first time they turn their attention to living healthfully in the interests of the expected child. Most women perhaps experience varying degrees of discomfort and a slight sense of physical incapacity, especially during the later months, but such does not constitute ill-health. Some women, usually those who have not the best health ordinarily, experience the actual disorders which may arise in pregnancy, and for these last, which I do not write about, I would advise no home treatment, especially the taking of medicines which have to be administered with particular caution and knowledge during this period, but rather that the mother should seek the advice of her doctor. It is of the greatest importance not only to live healthily, but to maintain each organ and function of the

tubes and a pair of *ovaries*, the *womb*, and the *vagina* (or front passage). The accompanying diagrams show the several parts. Fig. 1 shows in the lower part of a human skeleton the position of the pelvis; Fig. 2 shows the arrangement of the tubes and ovaries and womb in the body. We shall best understand what *the pelvis* is like if we imagine a fair-sized bony basin with the bottom knocked out; open above into the abdomen, and below—by means of the front passages, viz. the vagina and the smaller passage which conducts the water from the bladder; and the back passage, which is the lower end and opening of the bowel—to the outside of the body. Within the basin are slung certain organs which are, taken in order from behind forwards, the rectum or lower end of the bowel, the

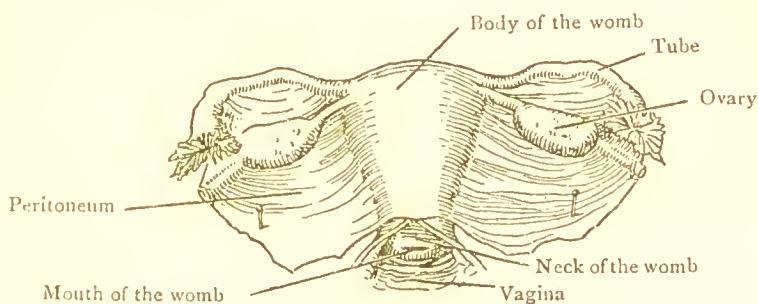


FIG. 2.—The Womb, Tubes and Ovaries.

womb, and in front the bladder, the last two being suspended in the pelvis by thin bands and folds of supporting material which are known as their “ligaments.” When we thus see the close relation of these organs in the body we can appreciate how continual constipation, which means a hard swollen bowel, will press upon the womb, and by pushing it out of its place help to cause displacements; how also at the monthly period, when the womb is enlarged and heavier, and also tender because its blood-vessels are filled with extra blood, the same pressure will cause pain; and how much standing or excessive exertion then will further increase the strain on the delicate supporting bands and folds, again causing pain, and in the latter case tending again to cause displacements. In the upper part of the basin, attached to it by thin filmy folds of supporting material called the “peritoneum,” and also enveloped themselves in it, lie on either side of the womb a tube and ovary. *The ovaries* are two little rounded bodies each about the size of a

pigeon's egg. In these are manufactured the microscopic "egg-cells," from one of which when fertilised (that is, united after sexual intercourse with the male element) originates the child. *The tubes* are shaped like tiny curved trumpets; the broad end of each is connected with the ovary, while the narrow end opens into the upper part of the womb. The canal of the tube is so fine that only a bristle will pass through it, and it is lined with tiny filmy "hairs" which have a constant undulating movement in the direction of the womb, a movement that has been likened to the waving of the corn as the wind blows over a cornfield. The tubes act simply as connecting passages, along which pass the egg-cells, directed by the motion of the "hairs," from the ovary into the womb. *The womb* is in size and shape like a small pear, with its inside hollowed out to form a cavity, and hanging with its narrow end downwards in the pelvis. The large upper part of the pear is called the *body*, the narrow lower end the *neck*, and where the stalk of the pear would be is a small, rounded, mouth-like opening which leads from the inside of the womb into the vagina, and this opening is called the *mouth* of the womb. The walls of the pear consist of thick fleshy muscle, and though they possess a wonderful power of stretching when necessary, they are usually, when the womb is not pregnant, collapsed together like the sides of a thick indiarubber-ball from which the air has escaped, and similarly the mouth of the womb in its ordinary state is so tightly squeezed together as to be firmly closed.

When the child has been conceived and commences to grow within the womb this enlarges to accommodate it. It not only stretches, but *grows* from its two and a half inch length to be an organ from twelve to fourteen inches long. After the baby's birth it commences to shrink; the extra material put on in its growth, now unnecessary, is by a wonderful physiological process dissolved and removed, until in about two months it has returned to almost the size it was before pregnancy began. It was at one time thought necessary to lie up for some weeks after confinement, but there is a growing opinion now among medical authorities that cautious earlier getting up after confinement is in healthy women preferable, in that the natural discharges which follow a delivery drain away more quickly and completely in the sitting than in the lying position, and also because the important "tone" of the womb is better preserved

if a due amount of movement is allowed. The doctor will, however, always advise as to the best day for getting up in every case, and every sensible woman will appreciate the necessity for avoiding exertion, or excessive standing, for some weeks after confinement—that is, while the womb is still larger and heavier than usual.

During the first three months of pregnancy there is little appreciable increase in the size of the mother's abdomen, and this is because the womb is still small enough to remain in its usual position inside the basin of the pelvis, hence during this period little harm will be done by wearing *loose* corsets. After the third month, however, it, as it enlarges, begins to grow upwards out of the pelvic basin, and coincidentally the abdomen increases in size up till the end of pregnancy, and therefore no corsets whatever can be worn during this period without injurious pressure on both child and womb.

Development of the Child.—The development of the child in the womb is a most marvellous and infinitely complicated study, and forms that branch of science called embryology, which in its intricacy and difficulty somewhat taxes the intellectual resources of the average medical student who has to acquire a working knowledge of it. The child develops from the fertilised “egg-cell” which results from the union of the male and female element after sexual intercourse. This egg-cell, like other animal body-cells, is nothing more nor less than a minute speck of jelly, only visible under the microscope, but differing from any other speck of jelly in its marvellous endowment of life, its power of dividing to form new cells from itself. From this cell, after it has itself divided into two cells, other cells originate by division of the previous ones, until a veritable Chinese puzzle results. Out of this colonies of cells are separated off into three definite layers, and from these arise the various structures of the body—the skin, bones, muscles, blood-vessels, brain, digestive system, &c.—all of which gradually work themselves into the form of the child. It is during the first three or four months that this wonderful fashioning of the child takes place, just as gradually the latent picture on the photographer's plate becomes visible as he develops it. At the end of the fourth month the child is about five inches long, and weighs a little less than half a pound; after this it is chiefly growth in the direction of size and maturity which occurs.

Life exists in the child from the first moment of its conception,

but it is only about this time, when it has grown sufficiently large and strong, that its movements are perceived by the mother as *quickenings*. This may be felt as a heaving or fluttering, or as a tapping or sudden jerk against the walls of the abdomen. After this until the child's birth the mother is constantly reminded by its movements of the life within her, and she is thus reassured that it is strong and vigorous.

The child obtains not only the nutrient material necessary for its growth, but also the oxygen it needs, from the mother's

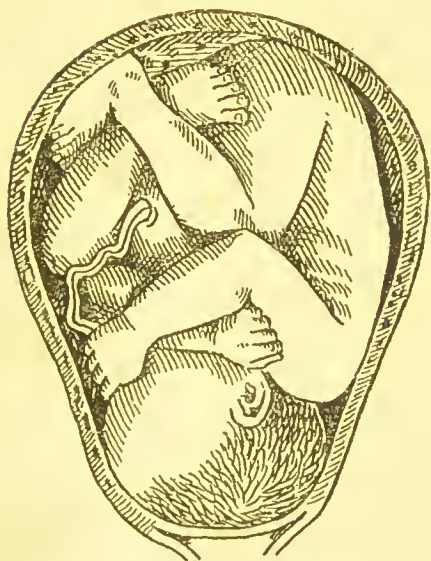


FIG. 3.—The child in the womb at the end of pregnancy.

circulating blood, through the medium of the "after-birth."

This is a spongy, reddish mass, which develops in the early months in connection with the wall of the womb, and to it is attached the navel-cord of the child. The necessary nourishment and oxygen from the mother's blood passes from the blood-vessels in her womb through the spongy after-birth, and out along the blood-vessels of the navel-cord into the child; and hence we see the use of the navel-cord, of the after-birth which acts intermediately between mother and child, and also the necessity for keeping

the mother's blood as pure and as rich in nutritious material and oxygen as possible during pregnancy.

The child lies in the womb enveloped in a thin, bladder-like bag filled with water, which developed in the early months from the same original cell as the structures of its body, and grew over and enclosed it. This "bag of waters" serves to keep it in a warm, even temperature, and to protect it by its buoyancy from any shocks or jars. It lies head downwards, neatly packed up, so as to take up the least possible room in the womb, with legs drawn up and feet crossed, its arms folded, and its head bent forward on its chest, waiting in "the attitude of its first prayer" for its call forth to life.

Examinations.—The mother is well advised to seek rather than shun, through motives of modesty, examinations by the doctor, since it is through the full information about her parts, and the way the baby lies, which we gain by these, that we can ensure her absolute safety in delivery.

Difficult labour, it is well for women to know, mostly results either from slight variations in the position of the child's head, which nearly always comes first, or the substitution for it of some other part of the body; or from some degree of smallness in the mother's pelvis, through which it has to pass. That is to say, there is a certain normal capacity and size of the bony basin which Nature has adapted to the size of the average child's head, and the measurements of which are known to us. In some comparatively few cases this capacity is diminished. If the fact is not known to us before labour begins, there will probably result a tedious confinement, with possible risk to the child; but if recognised beforehand, we can adopt various modern measures of treatment which will effect a safe and easy delivery. Likewise when, sometimes, for some reason or another, instead of that part of the head of the child which passes through the canal most easily another less favourable is substituted, suitable and often quite simple treatment is available to rectify it if the doctor can examine the mother towards the end of pregnancy, and again early when labour begins. She should therefore put no obstacle in the way of these examinations, which are completely painless, and which in pregnancy will be probably only two—one about the end of the fourth month to establish the fact of pregnancy, and one about the end of the eighth month for the purpose of measuring and estimating the size of the parts and the lie of the child.

A modern woman of average sense, and with the necessary knowledge of the facts of the experience which lies before her, who has placed herself in the hands of a skilful and sympathetic doctor and a thoroughly competent nurse, will face her motherhood with the full consciousness that she will pass through her pregnancy in comfort, and that her delivery will be compassed with perfect safety and without any unbearable degree of suffering. Perhaps those women to whom the test of the new experience is greatest are those, not a few, whom the world calls "neurotic." This is an objectionable word, since it has no exact definition, and is made to cover not only all degrees of nervous and moral weakness, but also much in disease

that we do not understand, and hence cannot otherwise account for. Such are the women of highly strung, irritable temperament, often over-sensitive and inclined to periods of depression. A great nerve specialist of the day has called such people "the salt of the earth," and undoubtedly they may be so, for perhaps none can live their lives so fully for themselves and others as those who can feel. Yet while their possibilities and opportunities are great, such people need more than all others the acquisition of self-control. This will be very necessary for the expectant mother, but she may take heart, for the instinct of maternity brings its own sense of strength. She struggles now for another, and that other an immortal soul. Life has a new and beautiful meaning; the petty worrying, the useless fits of despondency, the unworthy little jealousies and soul-cramping uncharitablenesses fall away. The mind that is to imprint and continue to impress another's cannot be too healthy and too well endowed with strength and breadth and height. Character-building has now a new motive and a new importance, and the preservation of her bodily health through the days of pregnancy and suckling becomes a sacred trust in the interests of her child.

During pregnancy the following ten points need the special consideration of the mother:—1. Mental state. 2. Diet. 3. Exercise. 4. Rest. 5. Fresh air. 6. Clothing. 7. Bathing. 8. Bowels. 9. Kidneys. 10. Breasts.

Mental State.—The marking of and production of deformities in children by maternal frights or impressions have been disallowed by science, and may be dismissed from the mother's mind as myths and impossibilities. The child's *nervous system*, however, is markedly influenced and affected by external conditions, and for this reason the mother cannot too well realise the importance of preserving to the utmost in her power a *calm* and *happy* frame of mind during her pregnancy. The anticipation of the coming child itself brings a happy serenity of mind to the expectant mother, but she must needs cultivate in addition, if she does not know it already, a serenity in all her feelings and actions. We think of a new life in relation to the two great influences of *Heredity* (that which a child gets from its parents and ancestors) and *Environment* (all that which surrounds and encircles the child), and of these two the last is the most important in its effect upon the child. On its early environment chiefly depends its future physical and mental well-being, and the first

environment is the mother's womb. She should therefore avoid or overcome, as far as possible, all nervous strain and excitement, all frights, fits of anger, periods of depression, and sources of irritation and worrying.

It is, perhaps, not within the scope of the modern mother to conduct her pregnancy on the lines of that idealist mother of olden times, of whom one has read that she filled her house with choice flowers and beautiful images of colour and marble, listened often to the discoursing of sweet music, and walked often in the sunny gardens seeking from Nature and from books inspiration and lofty thought; but there was a germ of wisdom in her doctrine, and the mother's surroundings and occupations should as far as possible have much in them that will call forth her best and sweetest and highest emotions and thoughts.

Diet.—This should not be in excess of the ordinary diet. The popular idea that a pregnant woman should eat for two is quite erroneous; seeing that the child weighs, when fully developed, only about one-sixteenth of the mother's weight, an ordinary diet leaves ample margin for its nourishment. Overfeeding in fact may give rise to an abnormally large child, and equally poor feeding to one that is puny and ill-developed. The diet, however, should be especially nutritious, since the child obtains the necessary nourishment for its development from the mother's blood, and all indigestible items should be carefully excluded.

Briefly, the diet in pregnancy should consist essentially of eggs, milk, meat, and the lighter flesh foods, cheese, fruit, and green vegetables; and starchy foods, such as cakes and biscuits, farinaceous puddings, much bread and butter and potato, like sugar, should be eaten sparingly, while all stimulants, sauces, pickles, highly seasoned or rich, especially rechauffée dishes, or really indigestible foods should be avoided altogether. Butcher meat should be taken only once a day at midday; and grilled meats should always be preferred to fried, and all meat should be taken rather underdone than overdone. The evening meal should be light, and the stomach not overloaded then. Porridge, boiled for three hours at least, is an excellent adjunct to breakfast, and brown wholemeal bread is greatly to be preferred to white bread; and fish, bacon, eggs, or poultry are advisable for the two lighter meals of the day. Custards, junkets, jellies, and stewed fruits, especially such as prunes, figs, and

rhubarb, are especially suitable as sweets; and only occasionally to vary these should light and easily digestible farinaceous milk puddings and well-steamed batters be taken. All well-cooked green vegetables are valuable, but green peas, potatoes, and maize from the cob should be taken very sparingly, since these are flatulence-producing, and flatulence produces distention, and distention produces discomfort, and even pain, during pregnancy. Fresh fruit should be eaten *abundantly*, especially with breakfast, and raw salads should be eaten *only* if they cause no indigestion or flatulence. Made dishes of game, second cooked meat stews, curries, pork, shellfish, ham, and other salted or cured dishes, nuts, pastry, new bread and hot scones, should be avoided altogether. Fluids should, as far as possible, not be drunk *with* meals, but water, soda-water, or Vichy water, fresh lemonade, &c., should be drunk freely *between* them. Tea and coffee should be taken in strict moderation—China tea is preferable—and coffee freshly ground only once daily with breakfast.

In regard to alcohol, my advice would be that this in any form, and even in a quantity far short of excess, should be avoided by an expectant mother unless advised by a doctor. We have abundant evidence that alcohol acts as a direct poison to the child through the mother's blood; for the children of drunkards not only show varying degrees of mental and nervous instability, but sometimes actual bodily deformities, epilepsy, and insanity. With such facts before us, it is only logical to avoid giving the child even very small doses of the poison; and here one may say that women who smoke should never do so during pregnancy or suckling.

During the *last three months* of pregnancy the quantity of fluids drunk should be limited to five teacupfuls per day (milk and water, tea and coffee, and if stimulant is taken only red wine); no potatoes should be eaten; no soup should be drunk, and little beef eaten, and as little sugar should be used to sweeten food as possible. All starchy puddings, such as rice, sago, cornflour, batters, &c., should be excluded from the dietary, and baked or stewed fruits, custards, and junkets should take their place. Fresh fruit should be eaten abundantly and green vegetables daily. This modification of the diet at this time has been shown by recent authorities to aid in producing an easy delivery by keeping the bones of the baby's head soft, without in any way harming the child.

Exercise.—Exercise, always short of fatigue, is essential during pregnancy. Apart from the fact that it promotes a healthy digestion, the mother must recognise the importance of good abdominal muscles at the time of delivery. The soft flabby muscles which result from a previously inactive life, and from a sluggish sofa-existence during pregnancy, will do their work badly in labour. Exercises such as are sometimes recommended for use in pregnancy should be undertaken, like massage of the abdomen, only after consultation with the doctor.

Walking is the very best form of exercise for the pregnant woman, and she should walk for at least an hour daily throughout her pregnancy. Driving over smooth good roads is a useful addition, but tennis, cycling, dancing, and games of any sort are inadvisable. She must, although activity and plenty of movement are very essential to her, avoid much standing, especially in the later months. She should also avoid most carefully all stretching up of the arms, as in putting up curtains, lifting of heavy weights, and straining, especially with constipation, which are all likely to cause miscarriage, especially during the earlier months. Travelling by car and train is not to be recommended, as this necessarily involves jolting and jarring, and often a rush ; and motoring for women who find it very exhilarating, or who are in any degree nervous, is not advisable. Sea voyages should not be taken unless absolutely necessary during pregnancy, as sea-sickness is liable to induce miscarriage in any one predisposed to this.

Rest.—A good night's rest is very essential, and a midday rest a great advantage in securing relaxation of the muscles and refreshment to the nervous system. The enlarged womb in the later months presses the contents of the abdomen upwards against the organs of the chest, and often slightly impedes the breathing ; the mother should then sleep with her head and shoulders more raised than usual, and during the day *her clothing should be very loose*, and she should avoid much stair or hill climbing.

Fresh Air.—An abundance of fresh air is essential to the pregnant woman, as she undoubtedly breathes for two, since the child's lungs do not come into action until after birth, and its necessary oxygen reaches it from her blood. As much time as possible should be spent in the open air. All the rooms she occupies should be well ventilated by open windows, and she should

sleep with her bedroom window open at night. Crowded gatherings, such as morning and evening services, receptions, and theatres, should in general be avoided on account of their bad stuffy atmosphere or nervous excitement. This does not mean that the mother should not seek the pleasure and variety of quiet social intercourse and interest and amusement, for these are very necessary to her. Some young wives appear to feel that they are by their condition debarred from such from considerations of decency and modesty. The women of ancient Rome merely discarded the waist girdle when pregnant—whence comes the modern French word indicating pregnancy, *enceinte*, unbound—and moved freely in their flowing robes among their fellows. If she is suitably dressed, surely the woman who has the right conception of her condition will go forth to mingle in society proud of her high office rather than with any sense of shame. The sight of expectant motherhood can never but impress those who see it with the highest possible sense of reverence and of an instinctive sympathy which would make for the tenderest care of her physical and mental welfare and the welfare of her unborn babe.

Infectious Diseases.—Pregnant and newly delivered women are especially susceptible to infectious disease; they take fevers in a severe form, and in pregnancy often miscarry as the result. Hence any house or person so affected must be most carefully avoided by the expectant mother, who must also on no account nurse her other children if they are suffering from any of these illnesses, particularly scarlet fever.

Clothing.—There are two chief considerations in the clothing of the mother, one the æsthetic, and the other the avoidance of any constriction or pressure, and both are summed up in the word *loose*. No corsets, either ordinary *or special*, should be worn after the third month, but support is very advisable, and especially after the first child, when it will generally be felt to be necessary. An old pair of corsets from which all the bones and steels except those at the back have been removed, and the front fastenings replaced by hooks and eyes, and which must be gradually let out from the back so as to be worn *quite loosely*, will be a great comfort until the seventh month. After this these should be abandoned, and a binder of huckaback towelling, or linen, or in very hot weather of butter muslin, should be worn, since this, besides supporting

the heavy abdomen and increasing the mother's comfort, will help to keep the child in good position. The binder should be eighteen inches broad, cut lengthways, and long enough to pass once round the body and lap over sufficiently to be pinned securely. It should be laid on the bed, the mother should lie down on it, and after lifting up the abdomen well and keeping its enlargement strictly in the middle line, she should swathe the binder ends firmly round the sides of the body, but not tightly, overlap them, and pin the binder securely along the middle with four large safety-pins.

The appropriate dress of pregnancy needs a little thought and special consideration. It should not lack taste, since one's mental attitude towards life is in no small degree influenced by one's clothes—all natural women know that; and to be suitably and becomingly dressed is salutary in its effect on both the spirits and bearing of a woman. The modern rest gowns worn long and full, made either in the particularly suitable Empire style, or else with loose Watteau back and full accordion pleated front, form the most suitable and becoming wear for the house from the middle of pregnancy; and these may be simple for morning and elaborate for later day wear, according to taste and means.

All pressure on the enlarging breasts must be avoided, and all tightly fitting bodices must be discarded. Loose blouses should be worn as far as possible. Lined bodices should have the breast darts and front laced with elastic instead of being sewn and hooked up; the back of the bodice should be made amply large, since there is always some increase in size here, and the material should be draped fully over the front.

The skirt should be made long in front, and may well have a broad hem to allow of still further lengthening the skirt as the abdomen enlarges.¹ The material should be gathered very fully or accordion pleated into the waist and put on to an elastic band, or into an amply large belt of soft material with a ribbon run through it as a draw-string, and broad ribbons simply tied in bows form the most suitable waist belts.

A long coat would be selected as the most suitable wear out of

¹ Or the unsightly shortening in the front may be prevented by having an extension of the material at the top of the skirt in front; using instead of a skirt-band a casing consisting of a ribbon sewn on, through which a ribbon can be threaded, and moving this casing up as the waist level alters.

doors, and this should be made especially long in the front. It will be advisably made with a very wide double breast, and the buttons should be moved as necessary. The back should be especially large, and Empire styles are very suitable.

The underclothing will be preferably silk, or in winter silk and wool or light wool next the skin, since it is very necessary to avoid chills and to keep the skin surface warm and acting well. All waist strings and bands should be loose, and petticoats and drawers should by preference be finished with a casing at the top and draw-strings.

The lower extremities are often troublesome during the later months of pregnancy. This is because the enlarged womb is pressing upon the large veins in the pelvis, which renders it more difficult for the blood to flow back through them to the heart, and hence produces overfilling of the veins in the legs and feet. This results in a certain amount of swelling of the feet, which often feel tired and aching, and in women who have borne several children the veins often become very obviously enlarged, or varicose. Garters, which tend by their constriction of the parts to further overfill the veins, should be replaced by suspenders during the first four months, and after this the stockings should be kept up by loose broad ties above the knees. The shoes should be particularly loose and easy, and a footstool used when sitting. The swollen feet will often be relieved by a good soaking in warm water containing a handful of Tidman's sea-salt or a little Scrubb's ammonia. If varicose veins exist, standing must be avoided, and the legs elevated as much as possible during the day. A good daily action of the bowels is in such cases of essential importance, and a bandage gives much relief. For this strips of flannel should be torn to make two bandages, each about six yards long and three inches wide. The first of these should be applied firmly up the leg, beginning at the toes, each turn well overlapping the last. Either just below or just above the knee the second bandage will be required, and it should be applied as far up the thigh as it will go and be securely safety-pinned. If an elastic stocking, which I think is less effective than the bandage, is preferred, it should fit firmly to allow of stretching, and be worn over a white silk or lisle-thread stocking which can be washed. Gentle massage of the legs and feet in an upward direction is often helpful. Particular care should be taken not to get such a leg

knoeked, as a bruising often results in an ulcerated leg, which is very difficult to heal. A large varicose vein very occasionally gives way, producing bleeding. There is no danger in this occurrence if the simple treatment is adopted of raising the leg high up to the waist level and applying firm pressure to the spot with the thumb over a clean-folded handkerchief, and as the bleeding ceases applying a firm bandage over a similar pad.

Bathing.—The activity of the skin is of primary importance in pregnancy, and whether or no a daily bath has been the rule hitherto, it must be so now. The water should be neither hot nor cold, but tepid—just a little warmer in cold weather. Cold showers should not be used, and the daily immersion should be followed by a brisk rub over with a rough towel, especially over the abdomen and down the spine. The parts should be bathed with warm water night and morning, and during the *last three months* a nightly sitz bath should be taken in addition, as this, by helping to render the parts soft and pliable, makes for easy delivery. The directions for using these should be carefully followed. The bath, which may be either a sitz bath proper or an ordinary deep zinc or enamel bath, should in winter stand near the fire, and close beside it there should be a can each of cold and boiling water, a pail for baled-out water, a bath thermometer (see Fig. 9), and a warm shawl. The mother should sit in the bath with her legs encased in stockings outside it, and the level of the water, which should be 95°F. , no more and no less, should be sufficiently high to well immerse the parts and reach almost to the hips; and her back and shoulders should be covered with the wrap. She should remain in the bath a quarter of an hour, adding small quantities of hot water from time to time to keep it at the correct temperature.

Douching should not be used during pregnancy unless by medical advice, and no sea bathing should be indulged in.

Bowels.—A good daily motion is of paramount importance, and this must not be scanty, hard, nor attended by straining. It may be contributed to by the use of oatmeal porridge with cream, wholemeal bread, freshly ground coffee, and stewed and fresh fruit for breakfast. If the mother is inclined to be constipated, she should be careful to drink plenty of fluid between meals, and should try taking a glass of cold water or Vichy water on waking in the morning. If twenty-four hours elapse without a motion she should

take an enema of lukewarm soapy water (see *Enemas for Adults*), or if the motions are hard, half to one teacupful of warm olive-oil retained overnight if possible. If this is unsuccessful, she should take a seidlitz powder or a dose or so of Eno's fruit salt. She should try the effect of posture (see p. 454), and make her daily walk as long and brisk as she can without fatigue. If this fails, she should take a teaspoonful of compound liquorice powder, or two or three half-teaspoonful doses daily of "cascara evacuant" in a little water. If the constipation continues, the doctor's advice should be sought, since powerful purgatives must never be taken during pregnancy.

Kidneys.—The kidneys have an extra strain on them during pregnancy, and the water requires to be very carefully watched. At the beginning and end of pregnancy it will probably be passed rather frequently. If at any time its quantity should be *lessened*, or if the mother is troubled with *constant headache*, any dizziness or blurring of her sight, or notices puffiness about her eyes, or swelling of the legs above the ankles, she should let her doctor know at once, as the kidneys are feeling the strain, and medical treatment besides special dieting will be necessary. The doctor will require a specimen of the water for examination at regular intervals, probably once a month during the first six months, and twice a month afterwards. For this the water should be passed into a clean chamber over-night and into the same the following morning. A clean medium-sized medicine bottle should then be filled and sent labelled with the name and the date, wrapped in corrugated paper.

Breasts.—It has been truly said that "every normally constituted woman will desire to nurse her own child, and one who cannot or will not misses not only one of the sweetest joys of motherhood, but one of its greatest responsibilities." The baby at the breast not only draws in milk, which in nutritive and digestive value to the child bears no comparison with cow's-milk or any other substitute, but drinks from a fountain of love, the greatest it will ever know. Perhaps though we know its gain in health, we cannot estimate what the breast-fed baby gains in happiness and complacency, and those mothers who have nursed know what the tender intimacy has meant to them. Certain special care of the nipples in the direction of developing them, and cleansing and hardening them, is necessary during pregnancy to prepare them for satisfactory suckling, both for mother and baby, and to avoid all risk of sore nipples, inflammation

and abscess of the breasts. Hence *during the last three months* the nipples should be drawn out night and morning with the fingers just washed, and gently manipulated, rolling them like a pill between the two fingers and thumb. *At bed-time*, before doing this, they should be well anointed with cocoa-butter, and *in the morning*, after carefully washing this off, bathed with pure whisky, or eau-de-cologne with an equal part of water added. They should then be carefully dried with a soft handkerchief.

Sexual Intercourse.—This should be regulated with special care during pregnancy, not only because the nervous systems of both child and mother require much rest, and therefore an “undisturbed maternity” is the ideal to be aimed at, but because miscarriages are frequently brought on through intercourse at the wrong times, or through that which has been ordinarily excessive, being continued during pregnancy. It should be more restricted than usual, and altogether avoided during those few days when the monthly period would have occurred, as it is particularly likely to cause miscarriage then; and during the last month, when the passages must be kept as scrupulously clean as possible.

Nausea or Vomiting.—This, which is known as “morning sickness,” is a common accompaniment of pregnancy, and usually begins after the end of the first month, and ceases at the end of the third. It is generally experienced on first rising in the morning from the lying position to an upright one. It is sometimes checked by taking a cup of hot weak tea and a slice of toast, or unsweetened biscuits, before rising; or the mother may find that she can prevent it by taking a scidlitz powder on waking and her breakfast in bed. If it continues, and food is not desired, no attempt should be made to eat breakfast, and it is better to wait and fast until hunger necessitates a meal later in the day. Half a teacupful of water with a small half teaspoonful of bicarbonate of soda dissolved in it will often arrest the sickness between or after a meal, and a cup of hot water sometimes gives relief. Consideration should be given to the diet; the stomach may better retain a small quantity at a time than a full meal. Thin crisp toast and tea or beef tea, bovril, or hipi, or a cup of Benger’s predigested food, or a cup of “Allenbury’s diet” food, alternated for a day or two, may lessen the irritability of the stomach and render it more tolerant of ordinary food. The diet should be carefully regulated as indicated in this

section, and car and train journeys should not be taken on an empty stomach. A long midday rest in a darkened room is often a help. This is a nervous form of vomiting, and is not due to "liveriness" or indigestion, though if these exist, or the mother often suffers so, they will make it worse, hence a calm mind and well-controlled nerves will often tend to minimise it, and perhaps prevent actual vomiting. If the vomiting is frequent, and food cannot be retained, or if it continues after the third month, the doctor should be consulted.

Flatulence.—This sometimes causes much discomfort, especially during the later months, when the stomach and bowels pressed upon by the enlarged womb are very intolerant of wind. It will be largely prevented by the avoidance in the diet of flatulence-producing articles, such as peas, potatoes, maize from the cob, nuts, and raw salads; and of fried and other unsuitable foods, or excess of farinaceous food; also by the ensurement of a good daily motion, and by seeing the doctor if there is a tendency to indigestion or liveriness, or if a disagreeable taste in the mouth is experienced in the morning. A sluggish liver is very common in the Colonies, though it is frequently not recognised by the mother as such, and she will often be greatly helped to digest her food better and to maintain good health and nutrition by a doctor's prescription which will make her liver more active.

If the flatulence is troublesome, it will generally be relieved by taking a dose consisting of half a teaspoonful of bicarbonate of soda, a teaspoonful of sal-volatile, and a few drops of essence of peppermint in a wineglassful of warm water.

Heartburn, if such occurs, will be relieved by the dose recommended for flatulence. Toast should be eaten instead of bread, and potatoes, porridge, and farinaceous puddings, like fatty foods, should not be taken, or only in very small quantities.

Toothache.—During pregnancy bad teeth often give trouble, and decay seems sometimes to be initiated in sound teeth. The alkaline mouth-wash and tooth powder recommended in Chapter XVI. should be used night and morning as a precautionary measure throughout pregnancy. Toothache is a great nervous strain, and the swallowing of the germs which decayed teeth harbour is not conducive to that pure quality of the blood which is essential in pregnancy, therefore really bad teeth are better removed, and will be safely and painlessly

extracted by an expert after the injection into the gum of eucaine and adrenalin, that is, with *local anæsthesia*. The toothache, if it is not relieved by holding hot strong solution of bicarbonate of soda in the mouth, or by the insertion into the tooth of a plug of moistened bicarbonate of soda, may be arrested very often by the *careful* use of pure carbohc acid. This, it must be remembered, is a rank poison, and strongly corrosive to the skin, gums, or any part of the mouth, as also to wood or furniture generally. A small bottle should be obtained from the chemist; a stout hat-pin, after being dipped in water, should be covered by a thin layer of cotton-wool rolled round it for about half its length; the tip of the hat-pin should be dipped into the bottle, so that the wool is just soaked, but not sufficiently to drip. A second person, if possible, should gently insert the tip into the cavity of the tooth, and wipe all round it as firmly as can be borne, taking care not to touch the gums, or tongue, or lips in inserting and removing the hat-pin, and the patient should not swallow the saliva afterwards.

Cramps.—Cramp-like pains in the calves and thighs are sometimes experienced in pregnancy. These will often be relieved by firm steady rubbing (especially with turpentine or chloroform liniment), by straightening the limb and change of position. If they are very distressing, hot fomentations should be applied over the affected areas (see *Fomentations*), or a hot bath often gives relief, but this should be used with caution by women who are not accustomed to taking a hot bath, or who are liable to miscarriage. In some cases the application of cold wet cloths (with ice added to the water if possible) seems more effectual.

Backache.—The sense of discomfort and dragging in the back, which is sometimes troublesome in the last month or two, will be best relieved by the use of the supporting binder; and from time to time by adopting the “knee-elbow” position (see Fig. 6), for which the mother should rest on her knees and elbows, leaning forwards with her chest towards the bed for a few minutes at a time.

Pain occurring in the abdomen as gripes, or cramps, or constantly situated in one spot, if it is marked, and not dispelled by the use of the dose recommended for flatulence and by efficient action of the bowels and the wearing of the binder, should always be reported promptly to the doctor. It may only be due to flatulence, or to the pressing of some hard part of the baby on one spot in the

abdomen, but it may be due to some abnormal condition, and should therefore be reported.

Bleeding, or White Discharge.—If such occurs during the pregnancy, the doctor should be informed at once. The discharge may indicate a necessity for douching, which must not be undertaken unless ordered, and the bleeding may be only the slight monthly flow, which in rare cases occurs in the earlier months of pregnancy, but may equally be the first sign of miscarriage.

One may call attention here to the great importance of seeking advice, in the case of all women even when not pregnant, for bleeding, however slight, which comes from the vagina ; also for a blood-stained discharge, and for bleeding which occurs *between* the monthly periods. Such bleeding is unnatural, and is very often the first symptom of a condition of the womb which, if neglected, becomes very serious, and which can only be treated successfully in its very early stages.

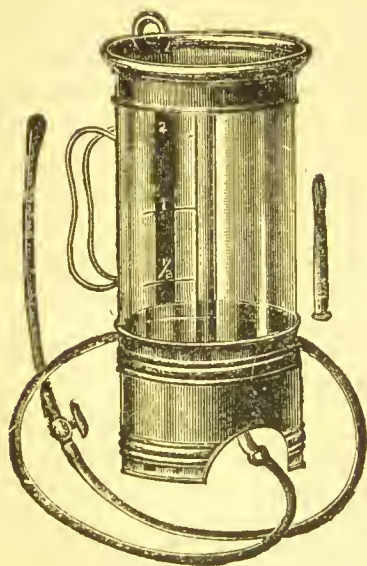


FIG. 4.—Douche apparatus.

Douching.—Douching is invaluable for many disorders of women. It should not be used as a routine practice by married women as it often is, and it is better never undertaken except by medical advice, since it tends to remove the natural secretions

which are necessary to lubricate the parts and keep them healthy. I have seen more than one case in which the daily use of douches containing Cond's fluid and other drugs had very markedly hardened and dried the vagina. If douches are used at all at any time they should be taken warm, *never cold*, and no disinfectant other than a teaspoonful of boracic acid powder added to the water when boiling should be used. It must be remembered that a continuous discharge, however slight in a woman, married or single, is unnatural, and therefore such should lead her to seek advice, but she will be well advised not to use douching in the absence of this. In case douching should be ordered during pregnancy, its method will be

described. The douche-can should be fitted with a glass receptacle inside, which can be removed for thorough cleaning. It should stand close to the bed on a shelf or table piled with books, or be hung from a nail in the wall, but in each case so that it is about two feet above the level of the patient's body when she is lying. The fluid used, and the temperature at which it is to be taken (tested by means of the bath thermometer), will depend upon the doctor's orders. A mackintosh or piece of American oil-cloth of sufficient length should be laid *across* the bed and allowed to hang down on to the floor into a slop pail. The mother should lie *across* the bed, if possible on a "douche pan" or "bed bath," on the mackintosh, with knees well drawn up and her buttocks at the edge of the bed-side, her feet resting on two chair seats. She should then, after allowing the fluid to run through the tubing and nozzle for a minute or two in order to expel air, pass the douche-nozzle which has been, like the inner glass lining of the can, *thoroughly cleansed with hot water and soap*, into the vagina without using any force, and then release the tubing which she has hitherto pinched or fastened by a clip to prevent the flow of liquid. An enema-syringe must *never* be used for douching the vagina.

Enemas.—Enemas should not be used in the ordinary way for the treatment of constipation, since the bowel becomes accustomed to the stimulus and will not act without it, so that the constipation is perpetuated. They are, however, very useful for the mother during pregnancy and during suckling: in the first case, because we wish to avoid the use of strong purgatives, and in the second, because the baby is frequently upset by the use of aperients. Every mother should therefore possess a Higginson's rubber enema-syringe for injecting fluid into the bowel. This is supplied with a short bone nozzle and a longer black vulcanite one, and the injection is more efficaciously given if the latter is used carefully according to instructions, since a more thorough evacuation of the bowels will result when the fluid, as in this case, reaches higher up the bowel. If the motions are hard it will be very advisable to use from half to one teacupful of olive-oil, warmed by standing the cup in a basin of hot water, and this should be retained as long as possible. In other cases, about a pint of warm soapy water should be used. The long nozzle should be immersed in hot water for a moment or two to soften it, and it should then be applied firmly over the short bone

nozzle. The lower end of the syringe should be immersed in the fluid, and not removed from this again until the injection is complete. The bulb should be compressed, and the fluid passed through the syringe to expel air before the nozzle is inserted. The mother should lie on her left side, using her right hand for the injection, the basin being placed on a chair by her right side. The nozzle should be lubricated with a little sweet-oil and insinuated about an inch within the opening of the bowel, the mother meanwhile straining down slightly. The bulb should then be compressed and some fluid squeezed into the bowel, after which, without any force, the nozzle can be pushed a little farther up, and whenever any resistance is felt the injection of a fresh stream will make a way for the nozzle, until it has passed completely in, except for about half an inch. The fluid should be injected very slowly, with pauses between each compression of the bulb, and the first slight desire to evacuate may be resisted, but as it becomes stronger the nozzle should be removed, and the complete evacuation of the bowels accomplished if necessary by successive short injections.

Miscarriage.—This means the expulsion of the child in an immature condition from the womb before the end of the ninth month. This unfortunate accident may occur at any time in pregnancy, but most frequently does so during the first three months, when it is specially likely to occur at the time when the monthly period would have been due. After the seventh month the child may live, but its hold on life is very small, and it requires very special attention and care. Miscarriage may be caused by a fall or twist, or sudden violent movement of any kind; by great exertion; by a fright or severe mental upset; by excessive sexual intercourse, or this at the time when the monthly period would have come on; by a severe shaking and jolting, such as a rough cross-country journey, especially in the Colonies; by, as I have known it, the effect of the noise and vibration experienced during a visit to the stamp batteries on the gold mines of the Rand, and by sea-sickness; by reaching up, as in hanging up curtains or pictures; by the use of a hot bath or hot douche, or of strong purgatives; by disease in the father or mother; and sometimes the cause cannot be ascertained. Some of these causes are only likely to produce miscarriage in a woman who is liable to miscarry; but since we cannot find out until a miscarriage has taken place whether this tendency exists or not,

all women should, when once pregnancy has occurred, be careful to avoid them. A woman who has once miscarried is more likely to do so again, and therefore she should be especially cautious, particularly during the time when the monthly period would have been due.

It is of great importance to realise what the first signs of it are, and what to do while the doctor is being sent for. In the first stage the child's attachments to the womb are being loosened, and proper treatment adopted now will often serve to prevent its expulsion. The first signs of a miscarriage may be much like the onset of an ordinary monthly period, with pain in the back and lower part of the abdomen, and a sense of weariness and dragging; or a slight bleeding, either with or without a certain amount of pain; or a sudden, sharp attack of bleeding.

Management.—All linen which is blood-stained and everything passed into the chamber should be put aside and kept for the doctor's inspection. The mother should at once undress, and after passing her water put on a clean diaper and get into bed, with two or three firm pillows raising her buttocks, and her head low. She can keep a quiet mind, for taken thus early the miscarriage will very likely be averted. If the bleeding is at all severe, an assistant should wring towels out of cold water every few minutes and apply them folded several times to the lower part of the abdomen; or, better still, an ice-bag may be applied (see Chapter X.). Cold water may be sipped, but no medicine should be taken, *and especially no ergot or brandy*, pending the arrival of the doctor. The doctor's advice should be implicitly followed, even if the mother feels so well as to find it difficult to consider herself an invalid. Prolonged rest will be necessary, whether the child has come away or not, to allow the womb to settle down again. It cannot be too well realised that there is far more risk of inflammation and of the occurrence of blood-poisoning in a womb which has been prematurely emptied than after normal labour, and that the necessity for skilled care is a very real one in all cases of miscarriage.

Many valuable lives would be saved, and much lifelong ill-health and suffering prevented, if those women who seek to rid themselves of the responsibility of motherhood understood and appreciated this fact. And the true significance of the crime, which is the destruction of a human life, would be better appreciated by them perhaps if they realised that life exists in the child from the very beginning,

and not for the first time when the mother quickens and can appreciate its movements.

The mother will be well advised if at any time during her pregnancy she feels unwell or anxious about herself to seek the advice of the doctor rather than take that of friends, who, with the best intention, often do much harm at this time.

CHAPTER II

PREPARATION FOR CONFINEMENT

“A mother has a sacred claim on the world; even if that claim rests solely on the fact of her motherhood, and not . . . on any other. Her life may be a cipher, but when the child comes, God writes a figure before it, and gives it value.”—KATE DOUGLAS WIGGIN, *Children's Rights*.

Necessaries.

A comfortable flannel dressing-gown, heavy or light according to season.

A soft easy bed-cape or jacket for sitting up in bed.¹

A hot-water bag or bottle.

Three yards of white flannelette for long stockings.¹

A piece of smooth white mackintosh sheeting about two yards long by one yard wide.

A second piece of mackintosh sheeting about one yard long.

A piece of white American cloth one and a half yards long.¹

A bed slipper.

A sitz-bath, or substitute, for use during the confinement.¹

A rubber Higginson's enema syringe.

A douche can, with glass lining, glass nozzle, and new tubing.

A feeding cup.

An ounce of boracic acid powder for dusting the baby's navel.

A pint bottle of saturated boracic acid solution, to be used diluted with just sufficient hot water to take the chill off, for the baby's eyes and mouth and the mother's nipples.

A four-ounce bottle of best olive-oil.

A medium-sized bottle of lysol.

An ounce bottle of liquid extract of ergot (fresh and “standardised”). *N.B.*—Ergot is only supplied on a doctor's prescription.

A packet of plain “sterile gauze” for dressing the baby's navel.

Three lengths of huckaback towelling for binders, each one and

¹ Useful, but not essential.

a quarter yards long by not less than eighteen inches nor more than twenty-one inches wide.

Two lengths of huckaback towelling, same length and width, for breast binders.¹

A box of large size best steel safety-pins for the binders.

A piece of soft flannel about two yards as a receiver for the baby.

A skein of stout white linen thread for tying the baby's navel-cord.

A one-pound packet of absorbent cotton wool for use during the confinement.

Two dozen yards of white butter muslin.

Three yards of cotton wadding (from the draper's).

Two one-pound packets of absorbent cotton wool.

From the last three, three dozen sanitary pads and a bed pad may be prepared as follows :—

Sanitary Pads to be made with the butter muslin and the absorbent cotton wool on the lines of Southall's "Sanitary Towels." The butter muslin is one yard wide. Take half a yard of the muslin and divide in the middle to make two squares, each of half a yard. Lay a layer of cotton wool an inch thick along the middle of the square of muslin, tack together the edges of the muslin over the wool, and leave the ends free. Each pad when finished should be four inches across and about eighteen inches long. Having made the pads, wrap each one separately in a piece of newspaper and pin securely; then put the whole of them in a large newspaper, pin tightly, and bake in a slow oven over a dish of water until the outer paper is charring. Put away without opening in readiness for the nurse.

Bed Pad.—Take a piece of butter muslin two yards long by one yard wide, cover one-half of the length with three yards of cotton wadding laid on in layers. Over the top of this put a layer of absorbent cotton wool half an inch thick, fold the other half of the muslin over the absorbent wool, and stitch together all round the edges the two lengths of muslin, catching in the edges of the wool and thus completing the pad.

The time taken to make the pads may be saved by getting a Maw's, Southall's, or Hartmann's "Accouchement Outfit," which

¹ Useful, but not essential.

includes pads, mackintoshes, pins, binders, and sundry extras, and costs from 20s. to 30s.; but the pads in such case should not be opened until required for use.

Long Stockings.—These covering the legs and thighs during the later stage of labour will add greatly to the comfort of the mother, by preventing any chilling of the surface during the necessary examination, and by giving her the sense of being well covered. They should be made as follows: Lay a full-sized stocking on a double length of flannelette and cut a stocking from the pattern, allowing two inches more in width all round until the upper limit of the leg is reached; then cut on for about half the length again of the leg, but *widening* at the same time to allow for the breadth of the thigh—exaggerated. The stockings must then be stitched all round and tapes sewn on an inch and a half from the top, long enough to tie round the thigh and keep the stockings up.

The Lying-in Room.—The following conditions should be as nearly fulfilled as possible. The room should be quiet, removed from the living rooms, and if possible upstairs. It should get sunlight, preferably in the morning, and be supplied with good artificial light suitably shaded, should be near the bathroom, and have an open fireplace. All superfluous furniture should be removed, and only that which is essential and can be easily cleaned and kept free from dust retained. This should include a bed, single if possible, with a firm mattress, and without a valance or curtains, which should be placed so that the light from the window falls sideways on to the head of the bed, and out of the line of draughts between the window and the door; a couch or second bed, an arm-chair and a footstool, and a low nursing chair; a folding draught-screen, a clothes-horse for airing and warming the baby's clothes; a good-sized but easily movable table for use, not ornament, and a small table by the bed-side.

Preparation of the Room.—If the floor is bare, so much the better; then rugs should be taken up and shaken, and the floor should be wiped over with a mop or a cloth tied over a broom-head, wrung out of warm water to which Jeyes' fluid has been added



FIG. 5.—Flannelette stocking.

according to the directions on the bottle. If the floor is carpeted, the carpet should be well swept a day or two before the confinement is expected, and gone over with a damp cloth, as above.

All paint and woodwork should be washed and furniture polished. Fresh curtains should be put up, or those up well shaken, and everything in the room well dusted, especially the picture frames and backs and the tops of wardrobes and high shelves, which are ever veritable dust-traps. If a fire is to be in use, a piece of wood and a glove will efficiently take the place of poker and tongs, and will conduce to that quiet which is so essential for mother and baby. A spirit-lamp, small kettle, and saucepan on a large tin tray will be convenient for night use; and the nurse must have ready access to a good supply of clean sheets and towels, &c., several nightgowns, and to a constant supply of hot water during the lying-in period.

There should be in readiness for use during the confinement:—

Plenty of *boiling* water.

A fair-sized and well-scoured enamel stewpan.

Either a large enamel jug (washstand size) *or* a good-sized fish-kettle, *or*, often handy in the Colonies, an ordinary four-gallon paraffin tin, each well scoured.

There should also be in readiness for use in the lying-in room:—

Two washstand basins and jugs, well scoured.

A bedroom slop-pail.

Two chambers.

Two good-sized pudding basins, enamel or china.

Two large pie-dishes.

Drains, if such exist in the house, should be inspected and pronounced efficient before any confinement takes place; and any smell or nuisance noticed in the house, or from standing water in tanks or tubs in the yards or garden, should be reported to the sanitary authorities at any time during pregnancy.

The outfit should be in readiness at least two months before the expected date of confinement, and it will be an advantage if the nurse can come in a week or so beforehand.

The Last Fortnight.—About a fortnight or ten days before the end of pregnancy the womb sinks down a little, the waist is lower, and the mother experiences a sense of relief and breathes more freely. She often feels a good deal of discomfort in her back during this time, especially at night, which will be relieved by sleep-

ing with a hard pillow inserted under the small of the back, and by getting from time to time during the day into the "knee-elbow" position. She should pay special attention to the regulation of the bowels, according to the instructions previously given, since constipation is more likely to be troublesome now even than earlier in pregnancy. She should take her daily walk but avoid exertion, and have much rest on her back, and little standing. The sitz-bath should now be taken at a temperature of 100° F. If the nurse comes in now, in addition to the fact that she will get to know the ways of the household, and be able to get everything in readiness

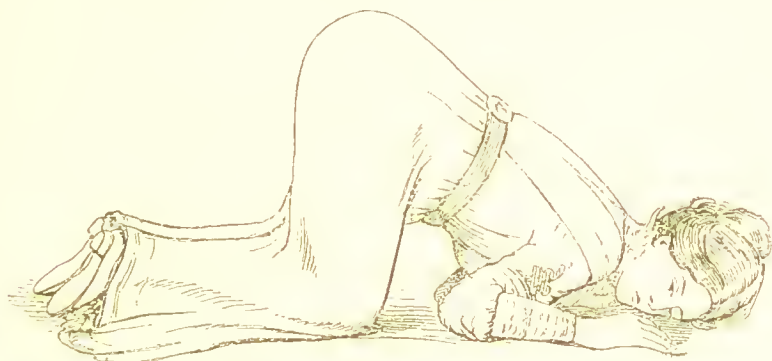


FIG. 6.—Knee-elbow position.

for mother and baby, there is much which she can do to save the mother the fatigue which doing it for herself often means now.

Labour.—What is labour? It is equivalent to the dropping off from the parent tree of a ripened fruit, though not so simple a process, and it occurs when the child is sufficiently matured to live a separate existence.

The whole process, which is governed by definite natural laws, depends on that wonderful property of the womb called "contraction." This contraction, which is not continuous, but which occurs at regular intervals, is a "tightening up" and "drawing together," or stiffening, of each fibre of the muscle which forms its walls, so that during the contraction the womb becomes smaller and harder. The unborn child, still enclosed in its protecting bag of waters, having thus less room, is urged on downwards each time there is a contraction; and its head, preceded by the soft pad which the forepart of the bag of waters forms, passing downwards through

the basin of the pelvis, presses into the narrow neck and against the closed mouth of the womb, and gradually stretches these until they open sufficiently wide to let it pass through. During this time, which lasts a few hours, and is longer and more trying with the first child than with later ones, since the parts have not been stretched before, the mother feels each contraction as a "pain," in the lower part of the back and lower part of the abdomen, not unlike that experienced with the onset of a rather painful monthly period. The pains come at intervals, at first long, of about half-an-hour, and later shorter, about every five minutes, and will be much relieved by prolonged soaking in the hot sitz-bath and other medical treatment which the doctor will often adopt; and the mother will hasten the stretching of the mouth of the womb if she keeps actively walking about between times.

When the gateway is opened, the bag of waters breaks; a rush of warm fluid escapes, and the child, pushed on by stronger "contractions" of the womb, descends through the front passage, which stretches slowly but steadily as it advances. The mother now has a strong inclination with each contraction to assist matters by "bearing down" or straining down; and many other muscles of the body, as well as those strong ones enclosing the abdomen, work with the womb in expelling the child. She is advised to aid this downward pressure by fixing her feet and pulling strongly on a towel or sheet tied to the end of the bed. This, if she learns to throw her will into it before she has chloroform, she will continue to do when she is given this. It takes about two hours, with a first baby, for the passage to stretch sufficiently for the child to be born without overstretching and tearing the outlet of the vagina. During this stage the pains are stronger, and the mother would, as it progresses, be called upon to suffer more severe, and in the vast majority of cases quite unnecessary, pain if it were not for the blessing of chloroform, which throughout this stage may be used by competent hands with perfect safety for herself and the baby. It incalculably relieves the pain when given, as it always is, short of making the mother unconscious.

After the baby's birth there is a pause, during which the mother hears the first cries of her little one, and the doctor and nurse separate the baby, and receive the after-birth, which comes away with little if any pain, and often without her knowledge, in about a quarter

of an hour. The labour is then complete, and the mother, when her bed has been rearranged and she has been made comfortable, braced up with a snug binder and given a warm refreshing drink, may rest—and “surely at no time in one’s life is rest so sweet”—while the nurse prepares to bathe and dress the baby.

I have hoped, in describing the course of events in a normal confinement, to bring within reach of young mothers expectant for the first time such a knowledge of the real facts of the experience which lies before them as must bring reassurance, because I have found that the first approach of maternity, however keenly desired, means for many women during their pregnancies a time of anxious self-questioning and quite unnecessary fears, because their conception of the facts of child-birth have been clouded by ignorance, and too often quite erroneously formed. It is as a piece of *work* that I would have mothers think of labour, for this, as its name implies, is what it really is. It is a natural process, carried out according to definite natural laws, just as pregnancy is a normal bodily function. The mother who would accomplish the work well must prepare for it during pregnancy, and indeed before, by getting her muscles into good tone, and her general health into a state of excellence,—for this is possible during pregnancy, and ill-health is unnatural,—and her nerves steady and under good control. In labour, as with all great efforts, agitation, worrying, and want of self-confidence only hinder progress, while calmness and self-control hasten it. The mother who remembers when the time comes, and she hears the doctor pronounce that she is “in labour,” that her pains are *effective*, and in this very different from all the other pains we have to bear or witness, and that each pain is accomplishing a definite bit of work, will bear them patiently; and if she feels that each is bringing her nearer the realisation of a great ideal, she will bear them cheerfully.

Sometimes confinements are so easy and quick that the mother feels no need for any chloroform, and then it is of course unnecessary; but this is uncommon, and especially with first babies.

In those more infrequent cases where circumstances exist which would tend to hinder and delay the child’s birth, such as rigid parts which do not stretch easily, a particularly large baby, or a want of sufficient power to drive it on, we do not leave the mother as we once did to Nature, to go on indefinitely, since we have and understand the advantage when used at the right time, for mother and baby,

of those perfected artificial hands, which we call "forceps," and the laity call "instruments," which I find women often dread quite unnecessarily, or in a few cases demand impatiently before the best time for their use has arrived, to help the baby out and terminate the labour.

If a second doctor is asked for, no alarm should be felt by the mother or her friends. One often wishes at a confinement that one had two pairs of hands instead of one, and it is more often extra assistance that is called for than advice to meet a difficulty.

The expectant mother has no need to fear in these days of enlightened and skilful midwifery the almost unbearable degree of suffering, and the exhaustion of those long weary hours which often dragged on into two or three days, through which our grandmothers, nay even our mothers, frequently knew the fulfilment of their motherhood. Neither does child-bearing, properly managed, carry with it for her, as for them, the risk, if not to life itself, of long years of invalidism due to blood-poisoning developing in its train. The discovery of antiseptics like anæsthetics has inaugurated a new era for mothers, and if they learn to know and to bless the name of that great Scot, Sir James Y. Simpson, who first discovered chloroform and showed and advocated its great place in midwifery practice, they cannot forget the name of Lord Lister, the father of the practice of modern antisepsis. We have learnt to know the mighty power of the microbes who wait in the air and on the surface of the body, ready to enter through any open wound and set up blood-poisoning, and hence we modern doctors and nurses guard the mother during her confinement and lying-in as carefully as we should a patient for whom an operation is being undertaken. This is because we realise that when the after-birth separates from the womb, which it begins to do at the beginning of labour, it leaves in its old site an area that for all practical purposes is an open channel for these bacteria. Hence we examine her in the course of her labour with hands fastidiously scrubbed and disinfected, so that we can carry none in; and the nurse, during the fortnight which follows, applies to the parts covering pads, rendered germ-free by boiling or baking, with hands also scrubbed and disinfected, and constantly changes these pads to prevent decomposition of the natural discharges. No mother has any need to fear, therefore, as she would sometimes seem to, such a complication of her confine-

ment, but every mother should, with the right understanding of this question, provide herself not only with skilled help, but with thoroughly trained and conscientious nursing, and this caution is necessary, for the days of the motherly and well-meaning but ignorant and dangerous "Gamps" are not yet quite gone, especially in our Colonies.

Signs of Commencing Labour.—When the mother feels slight pains, similar to those of the monthly period, *occurring at regular intervals*, which should be timed by a clock or watch, of perhaps half-an-hour or an hour, which may be accompanied by a slight discharge of blood and whites, she may consider that labour has begun, and should send for the doctor and nurse. Her first indication may be the escape of a rush of warm water from the vagina; this would mean that the bag of waters had broken rather sooner than it usually does, and in that case also she should send for both doctor and nurse at once.

Management of a Birth.—Because it sometimes happens, especially in later confinements, that a baby is born before the arrival of either doctor or nurse, the following essential rules for the management of the birth under the various attendant circumstances are given:—

When the Mother is Alone.—If the pains become stronger and more frequent, the mother should undress and put on a clean night-gown and dressing-gown, and *lie on her bed*, with a mackintosh, if one is at hand, beneath her to guard the bed from the discharges which accompany the baby's birth. If the baby is born, the mother will be perfectly safe if she remembers the following three essentials: to lie perfectly still on her back; to ensure the baby's breathing; and to grasp her womb. She should draw up her legs and separate her thighs, and with her right hand feel for the baby—if it lies on its face pull it over, so that its face being uncovered, it is able to breathe properly, and cover up the rest of its body to keep it warm. She should then with her left hand feel for her womb, which she will discover as a hard, round mass in the lower part of the abdomen, and finding it, place her hand over it, and keep it firmly *grasped* until assistance comes. If the baby has not cried, she should, if she can, disturbing herself as little as possible, give it one or two smart slaps, as it is by means of its first cries that it begins to breathe. If she feels the after-birth come away with a gush of fluid,

she should draw the baby, without relaxing her grasp of the womb, to one side of the bed out of the way of the discharges.

When there are Assistants, and Skilled Help is expected very shortly.—If, as in most cases, there are other persons at hand to assist, then one will attend to the baby and another to the womb; or if there is only one, she will attend to the baby while the mother grasps the womb. The baby's head is born first, its face looking dusky and bluish until its body follows with another "contraction" of the womb a few minutes later. The assistant as soon as the head appears should feel round its neck to ascertain whether a loop of the navel cord, as sometimes happens, is encircling it. If it is, she should slip it off over the top of the baby's head, as it might otherwise strangle it.

How to Make the Baby Breathe.—If when the baby is entirely born it does not cry, the assistant should put her finger wrapped round with a handkerchief end, or piece of rag, into its mouth and clear out any material that may be there or in the back of its throat. She should then give it several smart slaps on the chest and buttocks. If after this it does not attempt to cry or breathe, she should flap its chest with a towel-end wetted with cold water, and should rub its lips with a towel, or if brandy or whisky are at hand, with her fingers dipped in one of these. If this does not produce the desired effect, she should separate the baby quickly as follows: Prepare *two* ligatures by taking *for each* a foot-length of white tape as narrow as possible, or three foot-lengths of coarse white thread knotted together at both ends; or failing these, half-a-dozen foot-lengths of the coarsest white cotton available, knotted together at both ends. Tie one of these ligatures steadily and without jerkiness *as tightly as possible* round the navel cord two inches from the navel, and knot it securely. Then tie the other about an inch farther on nearer the mother's body. Then cut through the cord midway between the two ligatures with a clean pair of scissors. The assistant should then put the baby into a warm bath (just comfortably warm to the back of the hand). She should fill her own lungs with a deep breath of fresh air, and placing her mouth against the baby's, should blow air in at intervals of two or three seconds. She should then continue the rubbing of the lips, repeat the smart slapping, and after a few minutes remove it from the bath, and if it has not begun to breathe, if any one knows how to do artificial

respiration (see Chapter XI.) this should be started with the child on a table, its lower half covered with a shawl or blanket, and continued until breathing commences.

If there is not this urgency, and the baby is breathing and crying well after its birth, it may be left for a few minutes, and the navel cord should then be gently held between the finger and thumb to feel its pulsations, and when these have ceased the attendant should prepare to separate the baby in the correct way, that is, *after careful disinfection of her hands, the ligatures, and the scissors*. Cases of fatal blood-poisoning and lockjaw have occurred in babies owing to disregard of *asepsis* in handling the navel and navel cord. The scissors used (which are previously boiled by properly trained nurses) should be as clean and bright as possible, and never those which have been used for garden or kitchen operations.

Separation of the Baby.—The assistant should prepare two large pudding-basins or pie-dishes of lysol solution (see *Confinement Necessaries*), putting into one basin containing a pint (two breakfast-cupfuls) of hot water *one* teaspoonful of lysol, and into the other containing the same *two* teaspoonfuls. She should then prepare the two ligatures for the navel cord as above described, and place them together with a clean pair of scissors to soak in the basin containing the two teaspoonfuls of lysol, and the basin should then be placed close to the child. She should now thoroughly scrub her hands in hot water and soap, then soak them in the other basin of lysol for two or three minutes, and, without drying them, proceed to tie and then divide the baby's cord, as above, and the baby should then be warmly wrapped up.

Cleansing of the Baby's Eyes.—The baby's eyes should then be well wiped out with a clean handkerchief or rag dipped in saturated boracic acid lotion (see *Confinement Necessaries*) to which a little hot water has been added to take off the chill, after which some of the same should be squeezed from a *fresh* bit of rag into each eye to well sluice it, while it is held open with two fingers of the left hand. In the absence of boracic acid, boiled water must be used. This first thorough cleansing of the eyes *as soon as possible after birth* is of the greatest importance, since cases are not uncommon in which the sight is totally lost through inflammation of the eyes caused by contamination from material in the mother's vagina during birth.

Attention to the Mother.—The mother's parts should not be touched at all if help is expected soon, but she should be made clean and comfortable by sponging away any discharge on the thighs and back; a clean folded sheet should be slipped under her, and a clean diaper or clean folded towel should be placed over the parts between the legs. The womb should still be kept grasped for fifteen minutes *after the after-birth comes away*, which it usually will in from ten to fifteen minutes after the baby's birth, and the *mother should remain strictly on her back with a single pillow, and without*



FIG. 7.—Method of grasping the womb after delivery.

any exertion, for twenty-four hours after delivery, not sitting up to pass water (for which a bed-slipper or other receptacle must be used) or for any other purpose whatever. A cup of tea, hot milk or bovril, or hipi will be grateful to her, and may be given as soon as it can be got ready from a feeding-cup or small tea-pot.

Bleeding after Delivery.—A certain amount of blood normally escapes with the after-birth, and small amounts continue to be discharged for a few days after labour. An excessive amount of bleeding is very unlikely to occur if the womb has been grasped continuously from the moment of the baby's birth until the completion of fifteen minutes after the after-birth has come away in the manner described (see Fig. 7). If it should seem to be excessive,

the womb (which should feel like a firm, hard ball when the after-birth has left it) should be rubbed and squeezed with both hands to make it harden and the grasp on it not relaxed, and a teaspoonful of the liquid extract of ergot, which will be found among the confinement necessities, should be given in a little water, and repeated in ten minutes if not effectual, but it is very unlikely that it will be necessary. The after-birth should be kept in a clean chamber for the doctor's inspection, and no stimulants of any kind should be given to the mother after delivery.

Care of Mother and Baby where Skilled Help cannot Arrive for several Hours.—In those cases where residence in remote country districts—not infrequent in the Colonies—makes it a certainty that no skilled help can arrive for some hours after a delivery, the following additional hints may be useful to those in attendance on mother and baby :—

All the soiled bed linen should be removed (the mother meanwhile remaining on her back and being disturbed as little as possible) and placed later to soak in *cold* water, after which they are easily washed, and a folded bath towel should be slipped under her buttocks.

Cleansing of the Mother's Parts.—The mother's parts should now be sponged quite clean with pieces of fresh cotton wool or clean rag wrung out of lysol solution (one teaspoonful to a pint of hot water), the attendant's hands having been previously cleansed as for tying the baby's cord. The parts should be cleansed by firm successive *wipes*, each with a fresh piece of wool, and each in a direction *from the front to the back passage*. A clean diaper or sanitary pad or a large thick pad of fresh cotton wool should be applied to them (and watched in case of too free loss), and this should be changed for a fresh one every few hours as it becomes saturated with discharge, the attendant's hands on each occasion being similarly cleansed. The mother's thighs and back should be cleansed after the parts with soap and water, and dried. The towel should then be removed, a clean sheet put under her (see *Sheets, Changing of, in Illness*), and a clean night-dress slipped on over her head. She should be covered warmly, and given a hot bottle to her feet.

The baby should then be washed and dressed as described in Chapter IV., after on this occasion being rubbed with warm olive-oil to facilitate the removal of the sticky white substance which adheres

to the skin ; and the water used for its bath should be just comfortably warm *to the elbow*.

Care of the Navel Cord.—The navel cord, after being well dusted with plain boracic acid powder, should be drawn through a hole cut in a three- or four-inch square of “gauze,” or previously boiled and dried rag, the edges folded in over it, and the whole turned upwards on the abdomen and secured with the binder. If this powdering and fresh dressing is renewed each day, and the child so held that the cord is not wetted at the daily bath, it will shrivel up and fall off in a few days.

The first dressing should be looked at in about half-an-hour, and now and then subsequently, in case, as sometimes happens, the cord should bleed, when blood will appear on the dressing. If this occurs, the cord should be re-tied with a fresh ligature applied very tightly.

Feeding of the Baby.—The baby should be put to the breast regularly and encouraged to suck every four hours after the mother has had a rest, and after the second day every two hours. A few teaspoonfuls of sweetened water (see *Sugar*) should be given after this has been done if the baby is restless during the first two or three days, but no other food until it is satisfied with what it obtains at the breast. For care of the breasts and method of feeding see Chapter V.

Later Care of the Navel.—The navel, if it has been carefully managed, should be quite healed before the monthly nurse leaves the house. If after this the mother notices any soreness, or discharge, or reddish points sprouting from it, or if she notices any protrusion of the navel as a swelling, especially when the child cries, she should at once report these conditions to the doctor.

Constant crying, coughing, constant straining with constipation or with difficulty in passing water, or constant vomiting, are likely to bring down a “rupture” in the form of a small swelling in the groin, or to cause a protrusion at the navel. The binder should be worn longer than the two months advised in the ordinary way in cases where the baby cries or vomits much or strains, and if such a swelling occurs it should be shown at once to the doctor.

CHAPTER III

PREPARATION FOR THE BABY

"The little lonely birth of him ! He made
His way to Earth alone, and none could aid
Him with a word of cheer,
Could reach his little unattuned ear
To tell the waiting welcome, the soft breast
Whereon his drooping little head should rest,
His to command by noon, or night,
In dark or light ;
The life-milk and the bliss
Of gaining it through the long, deep-drawn kiss,
The never-tiring arms, the cuddling croon,
How could he know that all this boon
And benison were his, when he should win
The harbour-passage in,
Should reach the port of Earth
Through that tempestuous voyage men call birth ?"

—E. V. COOKE, *Chronicles of the Little Tot*.

The Baby's Outfit.—The mother's own taste and the gifts of friends and relatives will largely influence the baby's wardrobe, but there are certain essentials which should be observed in its selection. The chief considerations in clothing a baby are, first, to secure a maximum of warmth with a minimum of weight ; second, to remember that the *arms* and *legs* and *thighs* and *abdomen* must be kept warm by guarding them from undue exposure ; and thirdly, that these parts must be absolutely unconfined and given complete freedom of movement. Long-clothes babies suffer a good deal from the dictates of baby fashion, and not only usually wear much superfluous clothing, which is unnecessarily stiffened, or which heats, weights, and discomforts them, but possess many garments which are quite useless and unnecessary. Short-coated babies, on the other hand, are very frequently insufficiently clothed, especially as regards the abdomen and extremities. The following list includes all the baby needs:—

Half-a-dozen binders about six inches wide torn from a yard width of soft white flannel.

Three dozen napkins of soft Turkey towelling.

Half-a-dozen flannel pilches, or triangular over-napkins.

Half-a-dozen fine *silk and wool* shirts, size 2, with high necks and long sleeves. These may well be of knitted wool for winter wear, but shirts of woven *cotton* must never be worn at any time.

Half-a-dozen fine lawn or nainsook slips.

Half-a-dozen best light-weight soft Saxony or fine French flannel petticoats, cut in one piece with box-pleated back, flat front pleats, and amply long soft shoulder straps to button in front.

Half-a-dozen fine lawn or nainsook sleeveless petticoats, made to fasten at the back.

Half-a-dozen fine lawn, nainsook, or washing-silk morning-gowns, trimmed with soft lace or fine lawn embroidery, made from a small yoke, without waists or waist strings, to fasten at the back, and with high neck and long sleeves. For winter wear these will be advisably made of the lightest weight white wineey or delaine.

A few pretty robes of fine lawn or muslin, made from yokes, and trimmed with soft lace or fine lawn embroidery, with high necks and long sleeves.

Six woollen night-gowns made of light weight white wineey, or French flannel, all made with high necks and long sleeves.

Half-a-dozen pairs of white knitted baby's socks or "bootees," not shoes.

A couple of fine wool jackets.

Two soft Saxony flannel head-squares, which may be silk-embroidered and buttonhole-edged.

A couple of closely fitting woolly hoods, not too thick, for winter wear, and a couple of soft close-fitting lace, lined with soft silk, or silk or satin merve hoods for the hot weather.

A large white fleecy shawl as an outdoor wrap.

The flannel binder should only be worn during the first two months to support the navel and keep the abdomen snug and warm ; after this a knitted band, preferably a Jaeger's "infant cholera belt," should take its place. A cotton binder should never be used under any circumstances. The silk-and-wool shirts, long-sleeved and high-necked, should be worn during the whole year, and always at night.

If the baby has a very sensitive skin, or suffers from prickly heat, the fine lawn slip should be worn next the skin, otherwise this is quite unnecessary. The flannel petticoat should be worn winter

and summer, and also at night if cotton night-gowns are used; the cotton petticoats are not necessary, but will often be worn, especially under the dainty robes, but on many occasions, especially during hot weather, they may be well omitted. Babies are very uncomfortable if their clothing is excessive, and are safely secured from chills as long as they wear the woollen shirt and flannel petticoat. Neither the morning-gowns or robes, nor anything in the baby's laundry, should be starched, and stiff *linen* embroidery should be avoided as a trimming.

Robes and gowns should not be made too long, nor heavily frilled, and arm-holes should be very large. Flannel garments should have herring-boned hems, or if bound, only soft silk should be used. All garments should be amply large, and necks and wrists are better finished with ribbon draw-strings than bands.

To meet sudden changes in the temperature and during airings in the colder weather the little jackets should be worn. No baby who is sensibly clothed will ever wear the heavy "capcs" which fashion decrees for him. The extra weight of all the material and trimming dependent from his delicate neck and shoulders is a serious consideration, and it is very inadvisable to load him with such a burden, besides which capcs are draughty, and afford him no real warmth. He is far better off wrapped in a large fleecy shawl. He should also not wear the hot unyielding, much-betrimmed baby hats or bonnets. Only soft close-fitting Quaker-like hoods are healthy and comfortable for him at first. The baby's face should be covered during his first airings by a light square of chiffon or gauze, and after that only on dusty or windy days, since he needs all the fresh air he can get, and at no time should silk or heavy lace handkerchiefs be worn to exclude it. The head-squares should only be used during his first weeks, when they are useful to throw over his head in passing from one room to another while he is getting accustomed to varying temperatures.

Layettes of garments specially designed for dressing an infant quickly and comfortably, without turning it at all, and without pins or arm-holes—the *Alione*¹—can be obtained, or patterns of these for home-making. These are pretty, and the styles are simple and easily managed. The clothes are first of all arranged in the order of dressing, one on the other, and laid on the lap. The baby is then

¹ From Madame Alione, 1 Waldemar Mansions, Fulham, London.

laid on them, and it can undoubtedly be dressed with much more comfort, convenience, and speed.

When the baby is shortcoated, which will be usually when he reaches his fourth month, and when his movements are strong and vigorous, he should wear the silk and wool shirt, knitted band, flannel or wincey or knitted woollen petticoat, and for effect, as a rule, he will wear a lawn or nainsook petticoat. His abdomen and legs and thighs must essentially be enclosed in wool when out of doors in winter, and were it not for the extra trouble involved in the constant changing of napkins, this would very often be advantageous in the house, and *long* woollen socks should always be selected. The white knitted woollen Jaeger "overalls," which consist of drawers, leggings, and either shoes or gaiter attachments all in one, and which slip on and tie round the waist, are very much to be recommended. His little dresses should all be made from yokes, so that his chest and abdomen may be perfectly free and unconfined. They should be long enough to cover his legs snugly, and of soft, easily washable materials which require no starch. In winter, soft white cashmere, or, better still, the medium thick white Aberdeen wincey (the real article will be best obtained in Scotland), which has a wonderful washing capacity, smocked or crewel-worked, and in summer, white washing silk, nainsook or white lawn, form the most suitable materials.

As soon as the child begins to crawl, little flannel or knitted woollen drawers should be worn over the diaper until this is left off. These are most essential if his abdomen is to be kept warm and covered, and he must not be put down at this time on to cold stone, or linoleum, or draughty floors. *When the child begins to show signs of walking* his dresses must be shortened. They will require broad hems to meet rapid growth, and tucks to let down; and much time will be saved, and also eye-strain, by the use of a chain-stitch machine. Fine white lamb's-wool is a very suitable material for outdoor winter garments, and knitted woollen gaiters, such as Jaeger's, coming well over the knees, should be worn during runs on colder days, and a light woollen shirt and flannel or knitted drawers, such as Jaeger's, worn under the little cambric drawers, should be worn at all times. Holland or zephyr overalls are sufficient over the petticoat in the hot weather for the toddler, and biscuit-coloured washing silk, smocked or embroidered with coloured

washing silks ; good linens in white, art-green, or strawberry tints, and in winter, wincey, serge, or cloth, similarly trimmed with yokes, make charming little frocks, which may be worn with or without a low belt. A white cotton crêpe material is sold at Liberty's which is cool and light, and needs no ironing or getting up other than simple mangling. The child in summer should wear large shady and well-secured *straw* hats. The protection afforded by cotton and open-work sun hats and bonnets on the hottest days is insufficient for the child who runs about, and in the actual Tropics pith helmets are a necessary safeguard.

Round linen hats become the small boy particularly well, and after he is put into suits he should often wear, especially for his play, his little "sweater" and braces, not belt. The little girl may very well discard petticoats and wear dark-coloured zephyr or serge knickers with thin detachable nainsook linings, or thin nainsook drawers worn underneath in the latter case ; light woollen combinations or a light woollen vest, and a loose woollen jersey, such as a Jaëger's "knitted jersey," for which knickers to match are obtainable, for her play. The Jaëger's woollen "golf jackets," companion to the boy's "cardigan jackets," are very cosy, becoming, and durable ; and in cold or muddy weather, for both boys and girls, drab or black stockinet gaiters are to be recommended. The little girl's drawers should button on to loose childish "waists" or stay-bodices of swansdown cloth or jean with shoulder straps, made specially for her, and also (with a second row of buttons) her petticoats, unless made with bodices. In winter weather woollen night garments of wincey or flannel should invariably be worn, and pyjamas or closed night-suits (such as Jaëger's) are much to be preferred for both boys and girls up to school age. The girl should wear woollen stockings as a general rule, and only socks in the hottest weather,¹ when sandals

¹ It is very advisable for all children, from the time they begin to walk, to wear knitted woollen stockings coming well above the knee instead of socks, during the greater part of the year. These may be white or coloured as desired, and attached by loops and tape to a button on the underclothing, and later by suspenders. Much illness would, I believe, be prevented were this custom universal, and bare legs, except during summer heat, unknown during the first few years of life. Knitting is a very useful accomplishment for mothers, and can never afford to go out of fashion, for it is not always easy to obtain the *long* and cosy woollen shirts, little drawers of varying size, and long stockings so much to be recommended during early childhood, and so easily knitted at home.

are good wear. European children should never in any weather or in any climate, in the writer's opinion, be allowed to run barefoot.

The child's first shoes should be very loose, and of the softest and most pliable material, such as quilted silk or buckskin, and later only those made of the finest and most yielding kid. Our adult feet are much distorted by the shoes we wear, and to them we owe our bunions, corns, and ingrowing toe nails. Only in the baby do we see the natural shape of the foot, which is broad and fan-shaped at the toes. The only correct shoe is one which is made from the pattern of a tracing of the foot, and babies' first leather shoes should always be so constructed. The little shoes must be amply broad across the toes, and long enough not to pinch the feet in any degree, and should essentially be "rights" and "lefts."

The Baby's Cot and Accessories.—The baby should possess, if possible, both a swing-cot and a portable basket-cradle without rockers; the former for his night use, and the latter for him to sleep in out of doors. The place of the last may be efficiently taken by one-half of a large Japanese dress-basket. Both cot and cradle should be trimmed like the baby-basket, with white muslin over white washing silk or sateen, and the trimming should consist of a full valance with a running string and detachable lining, which will easily come off and wash, like the curtains also, if such must be used, but they are much better avoided, since the baby needs all the fresh air he can get. Colour may be added by ribbon bows. A square of mosquito netting should be thrown over the cot in summer weather. The cot mattress should be preferably of horse-hair, which is much cooler and more healthy than feathers, while coir is rather hard. Special cot blankets are sold, and the sheets should be made of soft twill calico, not linen, which is too cold, nor flannelette, which is too easily inflammable, and hence dangerous. Eider-down quilts are not very healthy, and are better not used. A couple of mackintoshes will be required, one of which should always cover the lower half of the cot, beneath the sheet. An ordinary down pillow may be used as a mattress for the cradle, and a mackintosh and a couple of blankets, one beneath and one above the child, will suffice for outdoor use. Two small pillows can be ordered to be cut from an ordinary down pillow, or cot pillows bought specially, and the little pillow-cases should be made of cool, fine linen, edged with Cash's frilling. A small-sized hot-water bag, in a thick flannel cover, should

always be ready for use in the cot and cradle, and the mattress and pillow should be aired daily, like the rest of the bedding, if possible in the sun.

The Baby's Basket and Accessories.—This should be fitted with a good cushion and one or two capacious pockets, with needles and a card of mending wool, and a thimble and pair of small blunt-pointed scissors, and a powder-box and puff. A good baby powder will be one consisting of boracic acid one part and starch three parts, or sanitary rose powder is good. Fuller's earth should never be used, as it not only cakes, but is often impure. A tube of lanoline (not vaseline) should also be included in the basket, and this should be used on the first indication of redness or chafing. It should also include a supply of soft old rag which has been boiled and then dried, two large sizes of best steel safety-pins, and a soft infant's hair brush and fine comb.

The Baby's Bath.—This, which by choice will be white enamelled, should stand on a four-legged bath-stool, or may be bought complete with its own stand. The soap must be pure and unscented, and Castile is the best. The baby will need soft Turkey towels, squares of soft flannel for his washing, and a soft Turkey cup-sponge. A bath thermometer must always be used for testing the heat of the water, and the mother or nurse will require a couple of Welsh flannel aprons for bathing the child.

A pair of scales and a weight-chart, which will be described in the subsequent chapter, should be included in every baby's outfit.

The Nursery.—Every child should, in any case after his first year, if it is by any means possible, possess his own nursery, which should adjoin his mother's room; and the more fortunate child will possess two, a night one and a day nursery, adjoining each other, the one to include all his sleeping, washing, and dressing arrangements, while in the other he may feed and pursue his daily occupations. The child's health and happiness can be so much better ensured in a room of which all the general arrangements are planned especially for his use, that every effort should be made to dedicate such a room entirely to him if possible. An ideal nursery will be described, though some of the suggestions other than those which are essential may perhaps only be adopted by the parents of the most favoured child. The nursery should *always* be on the same floor as the mother's room, as only in this way can her supervision be efficient in those

cases where she has not herself complete charge of the child. It should be a large, airy room, with pleasant outlook, upstairs in a double-storied house, and so situated that it may have all possible sunlight, for sunshine apart from actual warmth is as essential to child life as to plant life. It should have an open fireplace, surrounded by a high and heavy nursery fire-guard, and in cold weather a fire will always be necessary; failing such, a large lamp should warm the room at night. The temperature of the nursery



FIG. 8.—Room thermometer.

should always be gauged by a room thermometer, which should hang beside the child's cot. The temperature should be 60° F. as a general rule, and a little more, perhaps 65° F., in the coldest weather; never more than this. There should be two *large* windows, placed high, and fitted with dark green or dark blue linen blinds, and curtains (unless white muslin, well looped off the floor) or other hangings should be avoided. Outside awnings are advisable during summer.

The lighting should be electric, suitably shaded, and failing this, lamplight (the lamps either fixed in wall-brackets, or standing high out of reach) is preferable to gas, which vitiates the room atmosphere. Gas-stoves are not advisable for the same reason; and wax night-lights, or else the dim "invalid-electric-light," which may be fixed into any fitting, and in which the strength of the light can be varied by pulling a string, should be used when light is necessary during the sleeping hours.

The floor should be of hard, polished wood, without cracks, but not too highly polished, or covered with parquetry; this, with large rugs, which can be shaken frequently (or better, the washing Thibet rugs from an Oriental store), is far more easily kept clean and dust-free than a carpeted floor, which also becomes so easily soiled from the various accidents of infancy and child-play. If a carpet is desired, it should be simply a loose square covering the middle of the room, which can be frequently taken up and shaken; the surrounding floor being stained. Linoleum and other similar floor-coverings are far too cold, and should never be used, and good Oriental matting (not cocoanut) which is soft and

easily sponged, retaining no damp, is far preferable, and is of course useful in warm climates.

The walls should be washed with distemper, such as Hall's, and a soft green tint is the best. Paper is objectionable, as it often retains from its manufacture actual poisonous products, and cannot be cleaned, nor so frequently and easily renewed as the inexpensive distemper wash.

The nursery decorations, which are so studied and loved by children, and so indelibly impressed on their visual memories, should be a question of some importance, since, if good, they must aid in training the child's artistic taste. Pictures should be chosen which are worthy facsimiles of originals, bright but not crude, and within the scope of the child's imagination. They should be *large*, framed in plain, white enamelled beaded frames which will wash, and hung low. Some of the beautiful old pictures of the Madonna and Child and cherub studies which children love, and Joshua Reynolds' child studies, might with advantage be copied and used as coloured prints for nurseries. Many pictures suitable for children may be chosen from the art shops and Christmas numbers, and some coloured pictures are to be found, if they are looked for, depicting scenes from fairy tales, &c., though there is room for many more, similar to those which so increase the fascination of modern childish literature, to adorn the nursery walls, as they do in tiles the children's wards in some of the modern hospitals. Low-placed friezes and dados, or panels showing farmyard scenes, and scenes from Dutch child-life, make a fascinating decoration where expense is no matter. The baby Kindergarten-room at Hull House, Chicago, with Walter Crane's "Flora's Feast," in white frames, low down on pale-tinted walls, would suggest itself as a beautiful model to those who are able to reckon without the consideration of cost in the arrangement of their nursery.

Some of the best large coloured pictures for children are, I think, the following:—

The "Animal's Friend" Series of Pictures. Selected pictures from the "Fitzroy Pictures," especially "Work" and "Play"; the "Months" and the "Seasons"; and the "Child's Garden" (all published by George Bell, London). The "Nursery Rhyme" Series of Six Coloured Wall Pictures (published by George Philip and Son, Fleet Street, London). Cecil Aldin's various "Decorative Panels," and other coloured pictures for children, and the Six

"Market-Day in Normandy" Pictures. Hassall's set of Six "Peter Pan Pictures," and "Four Nursery Pictures," and "Morning, Noon, and Night" set (all published by Philip & Tacey, London).

Nothing that will not wash should be included in the furniture of a child's nursery, and nothing that cannot be easily moved to allow of thorough cleaning, and nothing dingy, and, as far as possible, nothing upholstered, and sharp corners should be avoided. Cushions should be detachable, and should have white muslin or other washing covers. White enamelled furniture, which is light and inexpensive, and easily washed with soap and water, commends itself as the very best; and all the ordinary wooden pieces of furniture requisite in the nursery may be easily thus enamelled by painting them with two coats of white paint and a surface coat of Aspinall's white enamel. The furniture should include a chest of drawers on castors, wall-hanging cupboards instead of a wardrobe, with its high, dust-collecting shelf; a folding draught-screen; and an ample clothes-horse, for airing and warming linen. A low nursing-chair, without arms; a "nursery carpet" or an exercise basket or exercise "pen," described in the subsequent chapter; and a closed medicine cupboard, with a good lock, which should be placed high up on the wall, will be useful accessories. The larger cot which the child will need as it grows out of its babyhood should be of the Hospital Cot pattern; the sides high, and arranged to slide down, which allows easy access to the child at all times, and especially during illness.

Then, since this is the child's kingdom, there should be a good-sized deal table, preferably round, with the legs sawn off to a suitable height, covered with white American oilcloth, at which he may sit to feed and play; a few low children's basket-work chairs, and a toy cupboard fitted with shelves for books and toys.

A "sand-pile" should be an indispensable part of the nursery. The sand, which can be procured with next to no trouble (brought back in sacks from a seaside holiday, or commissioned from friends visiting or residing at the seaside), affords the child, in whom there is a natural love of digging and grubbing, such indescribable pleasure, that he should always have his box of sand in the nursery. The Empress Frederick, on the suggestion being made to her, ordered certain spots to be railed off and set aside for children in the great parks of the larger German cities, which

contain special sand hillocks for the tiny children's play ;¹ and the Pestalozzi-Froebel House in Berlin, of which the niece and pupil of Froebel has been the animating spirit, has a shady sand garden for the same purpose.

With the large square of American cloth, which is invaluable for him when he plays with water, or otherwise makes a mess, the sand sprinkled with water, and a tiny spade and bucket, and wheelbarrow, the little toddler will while away many hours in happy play, and the use of the sand in his first play-education is referred to later in the chapters on "Early Education" and "First Lessons." A large safety rocking-horse will form a delightful addition to the nursery.

A good gramophone, which may be bought for about £5, will, if the instrument is rightly used, and records are suitably chosen, be not only a source of pleasure to the child, but will also aid in training its musical sense.

The gramophone should be fitted with an oak or mahogany trumpet, which subdues the sound, not brass, and "piano" or "pianissimo" needles should invariably be used. Good records, which are really musical, should be selected, and while the child will like to dance to pretty bright dance music, it will learn to appreciate many of the ballads and tuneful operatic selections.

One might adopt for the comfort of the little toddler the low rail running round the room at a suitable height for him to reach, and the rope which can be stretched across the nursery, with which a charming Swiss children's hospital has fitted its wards, which he may help himself up by and find support from during his first unsteady voyages.

In the case of an upstairs nursery it is very advisable for the nursery landing to have a gate, which can be securely fastened, across the head of the stairs, and for the stair railings there, if wide apart, to be fenced.

No drying of clothes or napkins, or ironing, should be allowed in the nursery, no soiled linen or soiled napkins or utensils should remain there, and no food be kept or prepared there.

The Nurse.—If the child is to have a nurse, her choice is a very important consideration. Wherever possible it is an undoubted advantage to have some one who can efficiently attend to the little

¹ This suggestion has recently been made practical in certain of the large London parks.

practical duties of bathing and dressing, washing of napkins, feeding and airing, &c., for there is no art in doing oneself what others can do as well, and the mother has duties to herself, her husband, and society as well as to her child. It is, however, of such first importance that the person undertaking these duties should be entirely suitable, thoroughly efficient and trustworthy, that if she cannot fulfil these conditions the mother would emphatically be the best nurse for the child, and even where she does, the mother's supervision must be close and unwearying. Her directions, whether the nurse has had special training and experience or not, should govern every detail of the child's daily life ; and when he begins to run about and talk, if the mother's instincts are strong enough to desire his greatest good and the realisation of the highest ideal of motherhood, *her* influence chiefly, and no one else's, will encompass most of his waking hours.

The nurse should be preferably between the ages of twenty-five and thirty-five ; intelligent, gentle, and refined in her manners and speech, and free from any physical peculiarities. She should have good teeth, which should receive daily cleansing, sound lungs, good digestion, a daily bowel action, and sweet breath. Her hair should be frequently washed and carefully brushed ; she should have a daily bath, wear clean linen, and in the house washing frocks with detachable washing sleeves, especially during the child's infancy. If she is to be a really good nurse she will have a true love of children, and will have taken the position chiefly on account of this, rather than because it supplied her with a situation. She should be really good-tempered and willing to play with the child, and should have such a high conception of his importance and such an affection for him as to be willing to work hard, and absolutely loyally in his interests.

These essentials will perhaps not be easy to find in the modern English servant, especially in the Colonies, but inefficient, unintelligent, unreliable, unrefined, and badly spoken makeshifts are much more undesirable, and even dangerous, as children's nurses than they are in any other department of domestic service. Coloured servants will often relieve the strain which the tired, often overworked colonial mother of small means must experience, but they can never safely be allowed to undertake the duties nor fill the places of good white nurses ; and in fact, male or female, should never be allowed to take the child out of its mother's sight.

The mother should decide upon and control the direction and destination of children's walks and airings with servants. Infectious diseases are caught through grouping of nursemaids and children at favourite rendezvous of the former; children are very often neglected, not properly exercised or amused, and carelessly exposed to hot sun, or in cold weather allowed to become too cold by standing or waiting about.

I should like here, in the interests of professional nurses, to enter a protest against the custom of dressing children's nurses in the cloak and bonnet and veil which is the recognised badge of hospital training. It is vexatious, to say the least of it, to the more refined members of the nursing profession, to have to frequently encounter servants, often unfortunately of a very low type, wheeling out their little charges dressed in the uniform which they are forced to adopt, and only feel a pride in wearing when it hall-marks them as members of their own noble profession. White piqué or linen dresses and white gloves, and shady hat in summer, and grey or blue woollen materials with a neat bonnet in winter, with collars and cuffs, form the most suitable garb for the child's nurse.

The Mother's Diary.—It is, I think, a practical suggestion that mothers should intelligently keep a mother's diary or a "child's life-book," in which is recorded each step of the physical and mental progress of the child. It is possible to observe and study children while caring for them. Those who have already kept such records have added much to child study, and were they more universal, and made to include all practical questions in child life, they would contribute a great deal to our knowledge of how to care for and train children.

Such a diary would include the landmarks in the child's growing intelligence; his first recognition of those around him, the time of his first smile, his first fears and their causes; first dislike of strangers; his first intentional and later imitative actions. The method of feeding him. The period and manner of his teething. His weight and height at different periods; the stages of his learning to walk and to talk. The forms of play which most appealed to him. His illnesses; his individual tastes, and his ideas as the world unfolds before him, often so amusingly expressed. His little traits, good and bad, and the time they were noted, and his individual responses to methods of training.

CHAPTER IV

INFANT MANAGEMENT

“The most important part of education is right training in the nursery.”—
PLATO.

Regularity in Management.—The first essential in the management of the baby, and one which cannot be too strongly insisted upon, is the strict regularity which must govern all the details of its daily life. It must from its first day eat and sleep and be changed by the clock. Upon this chiefly depends its own health and happiness, the ensurement of a stable nervous system, and no less the comfort of those who have to do with it. Only the baby who is fed with measured amounts at regular intervals digests its food well, and only the baby who is laid down to sleep without any hushing or coaxing at a certain hour forms the habit of falling asleep at that time, to its own infinite advantage as well as its mother's or nurse's. This systematic regularity in the baby's handling from the very beginning has a moral no less than a physical value, for by accustoming the child from the first to good habits of living we lay the first seeds of obedience and good conduct later on, since as a little child he will obey essential rules, and to a great extent govern his actions by force of habit.

Bathing and Dressing: *Bathing the Baby.*—During the first two years the bath will be best given in the evening, and the child sponged over in the morning. The bath should never be given just after a meal, after which at least an hour should elapse before it is given. It is most advisedly given just before a meal, and in cold weather it should be given near a fire, and a screen may advantageously enclose both fire and bathing arrangements. Everything for washing and dressing the baby should be in readiness before the bathing is commenced. The baby-basket, with the binder rolled up and needle threaded, the bath on its stand, cans of hot and cold water, and close at hand the sponge, flannel-square, soap, and bath

thermometer, a cup of boiled water, and squares of soft rag previously boiled for cleansing the eyes, ears, mouth, and nose. A towel-horse should be within reach carrying the baby towels, and on a clothes-horse the baby's clothes should be airing and warming. The water should be poured in, and the bath thermometer should be placed in the bath and kept there during the child's immersion. The temperature of the bath should be at the end of the first month 98° F., and it should be given at this temperature until the end of the third month, when it should be gradually lowered to 90° F. at six months.

The mother or nurse in her flannel apron should first of all cleanse and dry the eyes, nose, ears, and mouth with separate bits of rag dipped in the boiled water. She should wipe out the eyes from the nose outwards. The nose and ears she should cleanse very gently by screwing the end of a bit of rag into a small cone, and she should then carefully dry the ears similarly with a clean bit of rag. The mouth should be very gently wiped out with a piece of rag wound round the little finger, carefully avoiding any pressure on the baby's palate, which is extremely sensitive and easily abraded. She should then wash the face and soap the head, sponge and dry it. She should now soap the body and limbs, first back and then front, with the flannel, and then lowering the baby firmly and slowly into the water, sponge off the soap in the bath, supporting the child on her left arm with its head out of the water, and steadying it by gripping the left groin and upper part of the thigh with the left hand from underneath. The baby should then be enfolded in the towel, and dried with very little actual rubbing, and merely a soft dabbing, since its skin is very delicate. Special attention should be given to the careful drying of the creases behind the ears, the folds of the neck, fold in front of the elbows, and behind the knees, the arm-pits, groins, buttocks, and parts, and all these should then be carefully powdered.

Careful attention should be given very especially during the earlier months to a most important little detail of the boy-baby's toilette; twice a week the skin clothing the end of the penis should

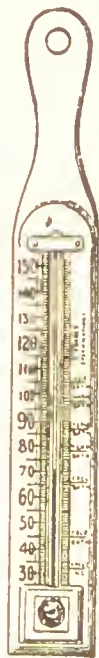


FIG. 9.—Bath thermometer.

be drawn backwards off the part underlying it, and any secretion carefully wiped away, after which the part should be anointed with a little sweet-oil. If this is not done, this skin (or foreskin) is very likely to become glued to the underlying parts, producing a condition which may later require circumcision.

In regard to the question of universal circumcision for all boy babies, the writer's advice to mothers would be that the operation should never be done without special indication for it, not only because, though slight, it is not entirely free from risk, but because it is better to so train a boy that his habits of life will be good than to anticipate his forming bad ones.

Dressing the Baby.—The child must then be dressed. The binder ready rolled up should be swathed on and stitched with

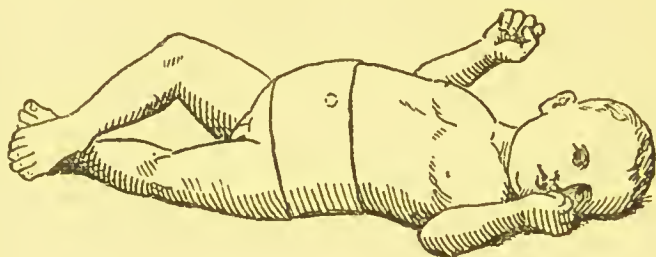


FIG. 10.—Application of baby's binder.

wool, firmly but *never tightly*. It should come about an inch above the navel so as to support it, but never sufficiently high up to fix the lower ribs, and thus impede his breathing movements, nor to bind the stomach, which lies above the navel, and which enlarges after a meal.

The little shirt should then be slipped on over the child's feet. The diaper should then be folded, and while the baby's feet are grasped and lifted up, slipped under the buttocks. It is advisable to cover this by a flannel pilch during cold weather and for airings. The socks should then be put on. The baby should then be lifted while the flannel petticoat is slipped under him, and this should be fastened. The cotton petticoat and gown, one inside the other, should then be slipped over the feet (not drawn over the head), and the baby turned over on his face, when both should be fastened at the back.

The baby's nails are most easily cut when he is drowsy or asleep, and should always be kept short. The washing and drying should be done as quickly as possible during the first few weeks, as the baby is very sensitive to exposure. After this time, when he is clothed in his woollen shirt and shoes, he should often be allowed to stretch and kick on the lap, and for a longer period when he is a few months old, when also his limbs and body should be gently massaged all over, especially the back and abdomen and limbs, and the *ankles*.

Bathing in Later Infancy.—At a year old, if the baby is healthy and vigorous, he should be put into his bath at a temperature of 90° F., and cold water should then be added to lower it to 85° F., and later to 80° F., while his body is well rubbed all over with the hand. At two years old he should have his bath in the morning and be put into the water at 80° F., and when he is about two and a half years old a spongeful or so of *cold* water should be squeezed down his spine at the end of the bath, after which he should be briskly rubbed over with the towel, especially down the spine. This is an excellent tonic for the child, as it not only tones his nervous system and quickens his appetite and circulation and tends to prevent colds, but causes him to breathe deeply, and thus develops good chest expansion, and he soon gets to look upon his cold douche as play. If he should seem bluish, or remain cold after it, hot water should be poured into the bath and the douche given while he stands in this. He should have his breakfast immediately after his dressing, and a good run as soon as possible out of doors. At the age of five the bath should be given at a temperature of 70° F., and at eight years quite cold, which in the house is usually about 50° F. to 60° F., according to the weather. Less than 50° F. the child should never have it, and hot water should be added to bring it up to this on colder days. The morning tub is so invaluable for the moral no less than the physical health of children, that everything possible should be done to encourage them to enjoy it. There is not usually so much trouble in getting little children in as in getting them out, but the older child will need to be taught to look upon his quite cold bath as play rather than as a duty, and little schoolboys will often with advantage be allowed a romp and a prize-fight, and even a football match, in the bathroom in swampy surroundings if they are to grow up with a love of their cold bath.

Weighing.—Every baby, breast or bottle fed, should be weighed weekly during the first six months of his life, fortnightly during the second six months, and monthly during the second year. Nothing else tells us so accurately how the child is thriving, and whether his nourishment is suiting him or not, and by this means we can early recognise a slight but continuous loss, or a failure to gain in weight, which could not be discovered by general observation. Special baby scales with spring and basket and dial are on the market, but these are not easy to use and quickly get out of order, and the ordinary pan scales used by grocers, large size, *to weigh up to twenty-eight*

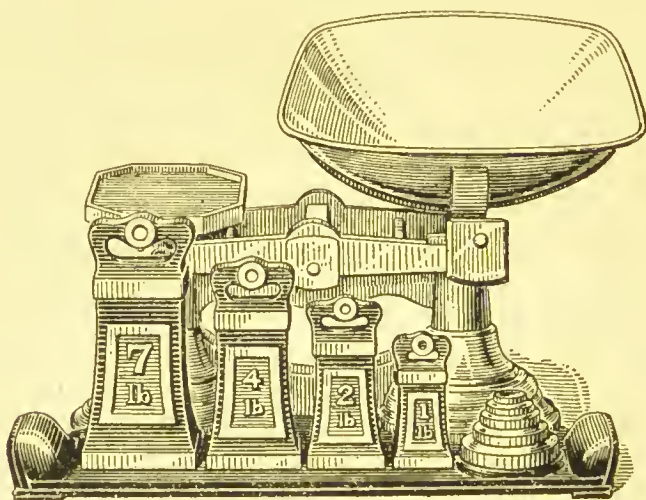


FIG. 11.—A suitable weighing machine for infants.

pounds (see Fig. 11), or the beam scales with pan and platform (see Fig. 12) weighing up to twenty-eight pounds at least, are the best to get. These can be kept in the nursery, and the child weighed, pinned up in a shawl, just before his bath. The pan and weight kitchen scales of medium size, if fitted as time goes on with sufficient weights, can be used during the greater part of the first year, and after this the child could be taken to a shop to be weighed, the weight of the clothes being known so as to be afterwards deducted. The wrap used to cover the baby at home should be always the same, and should have been weighed separately, so that this weight may be deducted from the total figure before it is recorded. The weighing should be done at a certain hour on a certain day each

week, fortnight, or month, and the result entered, with the date, on a chart, which should be simply a large sheet of paper pasted on calico or cardboard, ruled in two columns for date and weight, and hung in the nursery. Such a carefully kept chart is of the greatest assistance to the physician in times of illness.

The average weight of the new-born baby, *which should always be ascertained before or after the first bath*, is from seven to eight pounds. During the first three or four months the child if he is thriving should put on from four to eight ounces each week, and

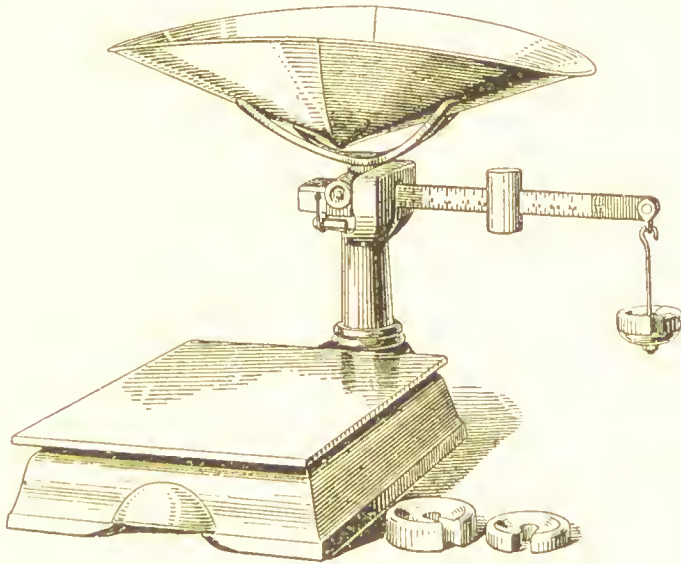


FIG. 12.—A good weighing machine for infants.

at the end of this period will often have doubled his birth weight. During the second three months he should gain from four to six ounces a week, and during the second six months of the first year he should gain more slowly but steadily from two to four ounces a week. He will often lose a little during an attack of diarrhoea, or the cutting of a tooth, or during very hot weather, but if a healthy child he will soon pull up again. If he loses steadily, or stops gaining, advice should be sought. During the second year the child should gain a further five to seven pounds, during the third year about the same, and at the fifth year he should weigh about forty pounds.

Summary of Factors in the Life of a Healthy Infant, and Landmarks in his Progress.—It is well for the mother at each weighing of the baby to review in her mind the various factors which sum up the life of a healthy infant, and the several points in his progress.

1. Is he gaining at least four ounces a week in weight?
2. Is his skin soft, pink, elastic, and fragrant; and are his lips rosy, and cheeks a healthy pink colour?
3. Are his limbs, *especially the thighs*, plump and rounded?
4. Are his movements vigorous, and does he use each of his limbs well; and are his joints and back *supple* and freely and easily moved?
5. Is he satisfied after his feeds?
6. Does he retain all his feeds, except perhaps two or three mouthfuls, returned immediately afterwards?
7. Does he cry seldom except when he is hungry; and is he comfortable and free from constant wind or colic?
8. Does he pass two or three very soft and smooth yellow motions in the twenty-four hours?
9. Are his feet and hands always warm?
10. Is his head dry as a general rule?
11. How much does he sleep by day and by night?
12. Is he good-natured and happy?

The order of the average healthy baby's achievements is usually something like the following, but some babies advance more quickly and others more slowly:—

During the first few Weeks.—The baby sleeps for a considerable part of his time more or less curled up. He stretches a good deal, and “strikes attitudes” with his head, limbs, and back when awake and undressed. He shows most intelligence and pleasure in association with his feeds.

Second to Third Month.—He makes the first attempts to hold up his head. He begins to kick freely and to wave his arms. He recognises his mother's face and voice, and smiles. He follows a bright light or brilliant colour or moving object with his eyes.

Fourth to Fifth Month.—He makes *attempts* to raise himself into a sitting position. He tries to grasp things. He turns his head round and tries to localise a sound. He often begins to recognise strangers and to distrust them.

Sixth Month.—He cuts his first tooth. He uses all his muscles

and his voice very actively; dances up and down on his mother's lap, and sprawls and turns himself over on the bed. He laughs and crows loudly when he is pleased, and screams with rage and impatience when he is displeased.

Seventh Month.—He sits up alone.

Eighth Month.—He feels his feet, and may begin to creep.

Twelfth Month.—He imitates such actions as waving and kissing the hand, shaking the head, and pointing the finger.

Fifteenth Month.—He takes his first unaided steps. He expresses his wishes pretty clearly by gestures, and short sounds which are generally intended to represent words.

Eighteenth Month.—The soft spot on the top of his head (or fontanelle) has quite disappeared. He uses little words.

Weight and Height in Older Children.—It is very advisable to weigh older children, twice in the year, up to the end of school age. They may be taken to a weighing-machine, and boots and outdoor garments should be removed. It is also interesting to keep a record of the height. The baby may be measured with an inch-tape as it lies extended on the lap; its length at birth is usually about twenty inches, and it grows at first at about the rate of an inch a month. Older children should be measured standing, with shoes removed, straight up against the wall, with head, shoulders, hips, and heels touching the wall. A book should be placed on the head, and a pencil line should be drawn on the wall to correspond with its lower surface, and the distance from this mark to the floor should be measured with an inch-tape.

Sleep.—The baby's cot should be placed close to the mother's or nurse's bed, where she may have ready access to it, but it should not sleep with her. It cannot healthily share another person's air space, and especially an adult's, and the temptation is often great in the case of the breast-fed baby, when it lies so close to her, for the mother to suckle it at irregular times.

The habit of rocking and soothing the child to sleep, though touched with romance and time-honoured, should never be begun; it should be laid down warm and dry, with its hunger satisfied and the light shaded, and accustomed from the first day to sleep without any persuasion. The habit of being put to sleep is very easily acquired, one which leads to a great deal of unnecessary trouble, and one which, once formed, is very difficult to break. If the baby

wakes through a sudden noise, it should be soothed, still in the dark, turned, and given a few teaspoonfuls of cold water, but not taken up. The baby will often lie and coo happily after waking if some one is near it, and it is a good plan in the daytime to be near it about the time it is likely to wake, to speak to it but not take it up. It can appreciate the protective sense of human companionship even at this early age, and there is much in accustoming it to wake happily. The baby may, when awake, be allowed to kick on its back, but should always be laid to *sleep* alternately on its left and right side, *never* on its back, as this favours restlessness, and later nightmares, and has an element of danger in that if the baby, in a semi-waking state, vomits slightly or returns a little of its food, this may enter the windpipe and cause suffocation. Sudden deaths have occurred in this way. Care should be taken to see that the child is laid to sleep with the ears flat against the sides of the head and not turned forwards, as this may lead to the deformity of unduly projecting ears in after life.

During teething and illness, disturbed nights must be expected. The child's father, who carries all the strain inseparable from the daily work of bread-winning, should not have his sleep broken by a crying baby, and the mother who has no nurse should always occupy with the child a different room to that in which he sleeps during such times.

It is very important to realise that a young baby has very little natural warmth, and therefore the feet and hands must be frequently felt to see that they are warm. The use of a hot-water bag is always advisable in cold weather during the first few months of life, and it will often be necessary afterwards. It should be placed, very well covered, in the foot of the cot, cradle, or pram, not touching the child. The baby must never obtain his warmth through being over-weighted with bedclothes; if he is clothed in wool, and lies between blankets, he needs no extra covering. The condition of the baby's head should be watched. If, when the weather is not hot, it is constantly damp with perspiration, it is an indication either that his clothing is excessive, or that the rooms he is kept in are too hot and stuffy, and he has insufficient fresh air; or such perspiration often indicates weakness, and is a common symptom of rickets (see Chapter IX.).

During the first two months of life a healthy and well-trained

baby will sleep most of his time, only waking and crying at his regular feeding hours. He should be trained as soon as possible to sleep all night without waking, and if he is correctly and regularly fed by day, and suffers from no indigestion, he will usually do this naturally after the third month, and sometimes before. In the later months he will sleep several hours in the day ; and every child until it is two years old should sleep in its cot for an hour in the morning, and for two hours in the earlier afternoon. From the second year to the end of the fifth, or sixth year if possible, a midday rest should be the rule, and nothing should interfere with this habit. Whether the child sleeps or not, it should be placed in its cot with frock and shoes removed and the blinds drawn to rest for two hours, and often company in the shape of a teddy-bear or dolly to hug, or a biscuit to nibble, will help it to settle to sleep.

The child's nervous system is so easily excited that its surroundings during sleep should be very quiet, and its eyes should be well shaded from light ; and it should be wakened, when this is necessary, very gradually and gently, never suddenly. It is not advisable to let a baby sleep continuously on towards evening, as it is less apt, if it does so, to sleep soundly through the night, but neither the baby nor the older child should be excited or much played with just before being put to bed.

A baby should be lifted up by slipping the left arm under its head and back, so as to support the spine and avoid straining the arms, and the whole spine should be well supported when carried, and backward jumps guarded against.

Fresh Air.—The importance of fresh air in infancy can scarcely be over-estimated, and while in the Colonies, in spite of other disadvantages, we have an almost ideal climate for bringing up our babies to a fresh-air existence, there will be many days in England when the baby may spend many hours out of doors. The infant should be taken out in its basket or cradle as soon as the sun has warmed the air in the morning, and should sleep as much as possible out of doors, on the balcony, verandah, or in a shady part of the garden. Discretion must be used to place it out of the direct rays of a very hot sun, and to shade it from the glare by an umbrella, not light sunshade, and at the same time not to place it in a dark sunless corner, or where it will receive the brunt of a cold wind or draught. This is infinitely preferable to daily walks or pram rides,

and the only days on which the child should be kept indoors are those on which rain, boisterous or cold winds, dust storms, or fogs or mists prevail. On the more inclement wintry days, more frequently experienced in England than in the Colonies, the child may be dressed in his outdoor things and carried or wheeled or allowed to run about in the nursery while all the windows are widely opened, and so get his airing. Indoors, during both day and night, the room the child occupies should *always have an open window*, and this rule should be invariable except when rain and mist or fog are driving in, or when dust-laden winds are blowing. On colder days the windows should be open at the top, and the baby should never be kept immediately under an open window, nor in the draught between an open window and an open door. The door is always better closed while the window is open. The child's cot at night should not be placed near the open window, and a screen should always be drawn round it to prevent the air from falling directly on to him.¹ The baby who is thus reared in a fresh-air existence will develop a sound constitution and healthy lungs; his sleep will be calm and refreshing, and he will have a good resistance to disease. The child who is not will lack all these great advantages in his life's battle, will take cold frequently, and perspire very much.

Muscular Exercise.—It is important to realise that a baby essentially needs muscular exercise, and should be given every opportunity for the development of its muscles. The tiny infant should obtain this by being allowed to stretch and kick on the lap, and by the massage of the body described under bathing. The baby should not be kept too much in its cot when awake, and when after about the fourth month it begins to raise itself up it should be frequently put into an exercise basket or bath, well padded with a blanket or cushions, or on to a large bed or "nursery carpet" on the floor, out of the way of draughts, to sprawl about and stretch and exercise its muscles. A *large* basket or bath or the "carpet" will be far preferable to the bed, where the child requires constant watching, and either will form a very safe playground for the baby, and give it far greater scope for the use of its

¹ The sleeping baby should never at any time be deprived of fresh air by cot curtains or by being smothered up with his bed-clothes, and there is no need to fear the night air for him, which is often purer than the day air.

arms and legs than it can get when carried in the arms or wheeled out in a perambulator. Perambulators are much better avoided altogether during the first three months, and after that should be provided with good springs and rubber tyres, a mattress made in two pieces, mackintosh, and small down pillow, as well as coverlet. The hood should only be used for shade and protection from showers, and the perambulator used only by those who can be relied upon to prevent injurious jolting or jarring, and the child

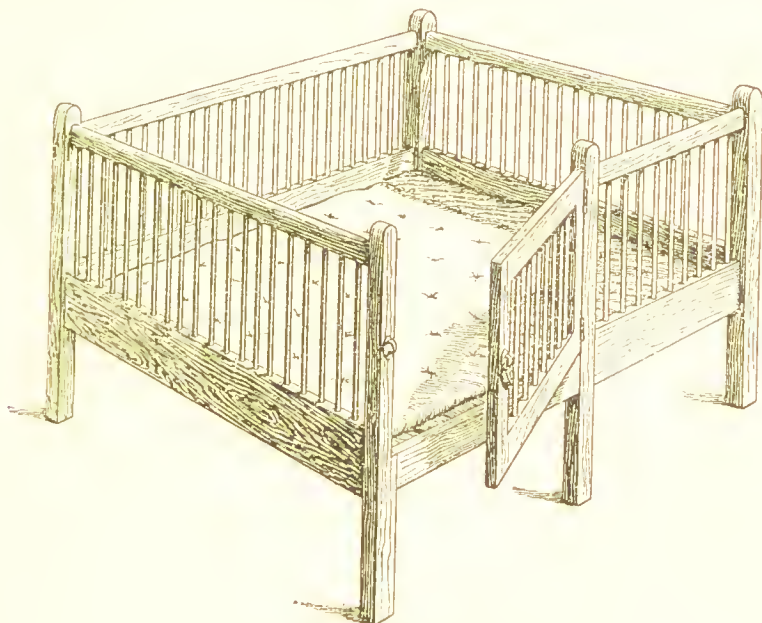


FIG. 13.—Exercise pen.

who sits up should be supported and made comfortable with pillows. When later on it begins to creep and make its first attempts at walking, it will derive benefit from such an “exercise pen” as that shown in Fig. 13. This keeps the child off the floor, where he is exposed to chill from the cold draughts which hover about the floor level, and where he encounters inevitable dust and dirt. In it, on a quilt or mattress or doubled blanket or rug, he is safe from harm and happy with his toys, and may tumble about and learn to use his arms and legs and develop his muscles properly without danger of injury, while his mother or nurse is free. Such a pen, the idea of which was suggested by Dr. C. G. Kerley in his

work on children's diseases, will be easily put together by a carpenter, and should be about four feet square, and made of any light wood. The legs should not be less than a foot long, so as to bring it well off the floor; the floor of the pen should consist of thin planks, and the hinged door should fasten securely with a small bolt or padlock, and the pen may be used indoors or out. If this device is not used, a "nursery fence" about two feet high, or a "baby's playground" (obtained from the Army and Navy Stores), may take its place, surrounding a mattress or rugs and cushions.¹ Such confinement is not, I think, advisable for a child over two years of age. The little runabout child should be *lifted up* by placing the hands under its arms, never by the wrists, which, like dragging it along when weary and lagging during walks, easily produces dislocations.

Napkins.—A little baby passes its water very frequently in small amounts, and it is of great importance to keep it dry, since it is not only often fretful and restless when wet, but runs, as its skin is very delicate, a great risk of chafing and soreness. The napkin should be examined as a routine after each feed, and changed if necessary. After each movement of the bowels it is advisable to sponge the parts. It is a good plan to lay a small square of butter muslin over the napkin before putting it on, as this, which catches the solid part of the motion, can be thrown away, and saves much trouble in the washing of the napkins. They should not be allowed to dry, and should be placed at once in a slop-pail of *cold* water and left to soak for some hours, after which they are easily washed. Their rinsing, free of soap, should be thorough, and soda should not be used in the washing, since it is likely to cause that irritation of the skin which it is so necessary to avoid. The habit of drying the wetted napkins and using them a second time must be strongly condemned, as it also leads to irritation and soreness. The nurse should be careful to wash her hands after changing the napkins and before she

¹ A good mattress, which is also cool and cheap and easily renewed for children's cots, or perambulators, may be made by loosely stuffing a bag of unbleached calico with finely cut chaff, soft hay, or well-picked green moss, washed and sun-dried; or, often in the Colonies, stripped dried banana leaves. This, covered by a bright quilt of printed linen or cretonne or gay patchwork, will form a good "nursery carpet." For the pen or "baby's playground" it is well to "tuft" the mattress with mattress needle and twine, but not necessarily for beds, prams, or nursery carpet when it can be well shaken up.

prepares the baby's food, for it is easy, especially during attacks of diarrhoea, to infect the child with its own stools by contaminating the food.

The napkins in these cases should be placed at once to soak in *cold* lysol solution (one teaspoonful to the pint of water), and left there for one hour before washing them, and they should be boiled. It may be said here that lysol used in the same way to soak stained clothes will quickly bring out the stains.

Stools: *Healthy Motions.*—It is essential for the mother to understand what the natural and unnatural motions of babies are like, as the character of the stools is a very important index to the child's digestion. The healthy breast-fed baby passes two or three daily, and they are in colour and thickness rather like thin mustard or yolk of egg; they should be evenly smooth, containing no lumps, and should only smell very slightly. The more nearly the bottle-fed baby's motions imitate the breast-fed baby's the better its digestion is, and the better its food is suiting it; usually the motions are a *little* paler, and perhaps a little thicker, and often a little less smooth. Only later on in the first year do the motions become rather darker in colour, and only after the first year, when the child begins to exchange its milk diet for a more varied one, should they become formed.

Unhealthy Motions.—If the motions are green, and offensive or putrid smelling *when passed*; if they are pale or putty coloured, or very greasy and rancid smelling; if they contain lumps of whitish material, or abundant slime; if they are frothy and sour smelling; if they are irritating or "scalding," causing soreness of the buttocks; if the child passes more than five in the day, or if it passes hard or formed motions or only one small one a day, there is something wrong. And if the mother cannot find out the cause and rectify the condition she should consult the doctor, for whose inspection the latest stool should be kept.

Control of the Bowels and Bladder.—It is most important to teach the child to be regular in the action of its bowels, and it is quite possible, by accustoming it to pass its motions at regular intervals, to form this habit, which saves so much trouble afterwards. The baby after it is shortened should be held out twice a day, after a morning and afternoon feed, over a chamber placed between the nurse's knees. In a very short time the position alone with a little

verbal encouragement and straining gesture will be sufficient to encourage the action of the bowels at that time. Children who are thus carefully trained are unconsciously learning to regulate the movements of their bowels and bladder, though we do not expect to rely upon it during the first two years. When the child begins to run about it is necessary to anticipate these needs very frequently, and it is wise to place it on a small chamber always after meals and after play and exercise, after the midday nap, and always the last thing at night, when it need be very little disturbed, though it should be specially roused for the purpose.

Babies are sometimes noticed to be distressed and to cry when they pass water; this may be due to the presence of a gritty material, or gravel in the water, when often the napkins are stained a reddish-brown colour, or sometimes it is due to tightness of the skin clothing the end of the penis, and in both cases the child will require to be taken to a doctor. Children sometimes wet their beds when they are much older. This is not naughtiness, but almost always a weakness of the nervous system controlling the bladder, and punishment in such cases is cruel and useless. The mother should first try home treatment, which will include trying to rouse the child to an effort to prevent it, and giving him all his fluid before 4 P.M. and after this only solid food, and he should always be taken up at night and placed on the chamber on his bed about ten o'clock. He should sleep on his side, with pillows to the back to keep him in this position, and the foot of the bed should be raised. He should be warmly clothed, and his feet should be kept very warm at night, but he should be lightly covered. The cold spinal douche used daily, and sometimes a brine bath (see this), will be useful aids in toning his nervous system.

If this is unsuccessful the child should be placed under medical care, since the habit is sometimes due to some underlying physical condition, and he will require medical treatment.

Drink.—The youngest babies require drink as well as food, and they often cry purely from thirst, which is not recognised. Hence all babies should have a few teaspoonfuls of cold boiled water two or three times a day from spoon or feeding-bottle, and especially if they cry between feeds, and during hot weather and teething.

Nervous System.—The brain and nervous system of the baby are naturally excitable; the reasons for this are discussed in

Chapter XV. Hence all young babies during the first six months of life are better not too much played with. They should never be tickled or excited in any way, and while due movement and dandling is good for them, much tossing or violent jogging should never be allowed. Perfect quiet should be ensured while they sleep. Some babies are more nervous or more strikingly forward than others, and these require a particularly quiet and peaceful environment. They should be left very much alone, should not be much talked to by the mother, and should not be constantly noticed by visitors and admiring relatives.

Kissing.—The practice of kissing babies on the *mouth* is not advisable. Sore throats and colds and many infectious diseases, such as consumption, whooping-cough, diphtheria, and others in their very early stages, may be communicated to the baby; and also the mouths of quite healthy adults often contain the germs of many diseases which, though they may not affect them, are likely to thrive in the baby's more sensitive mouth and throat. Coloured servants who frequently indulge in this habit should be severely censured, and it is as well to let all little children and strangers understand that the rule is invariable for the baby.

Cats not infrequently suffer from diphtheria, and also from consumption; hence if such a pet is noticed to be moping or unwell, it should not be allowed near a child. It should also not be left in a room with a baby, for fear that it may overlie it and suffocate it.

Dogs, in whom worms often exist, should be carefully prevented from licking a small child's hands, since in this way the eggs may be conveyed to the child's mouth and swallowed. Pets are very desirable for the little child, and will be perfectly safe companions if these precautions are taken.

Hot Weather.—Babies suffer very much from excessive heat, and need especial care if they are to pass not only comfortably but safely through the hot weather. During the very hot days in the Colonies the baby should always be dressed as usual in the morning, but during the hot hours, *from later morning to mid afternoon*, he should wear only his long-sleeved silk and wool shirt, napkin and flannel petticoat, and should be kept as far as possible out of doors *in the shade*, or, where this is impossible, in the coolest and airiest room with the blinds drawn, but windows widely opened, in the house. Sponging him two or three times a day with tepid water

containing eau-de-Cologne (see *Sponging*) will often have a wonderful effect in quieting restlessness and fretfulness and producing sleep. Restlessness and prickly heat will be best avoided by the use of cool mattresses and pillows; by inserting during sleep a folded linen cloth between the baby's head and often damp pillow, or frequently turning the pillow. He should have frequent drinks of cold boiled water, and his food strength, if he remains contented, should be lessened, since his digestive capacity is always lowered during very hot weather. That is, if a breast baby, he should have two or three tablespoonfuls of slightly sweetened barley water (for which the recipe is given in Chapter VIII.), or sometimes of sweetened plain water just before a breast feed; and the hand-fed baby should have more diluent and less milk than usual in his bottle, and if taking additional fat, the quantity of this should be temporarily lessened. He may not gain so well on this diet, but will pass through this time with far less risk of the dangers with which indigestion and diarrhoea threaten him in the hot weather.

Green or orange lined umbrellas should be used to shield the baby from the sun, and he should be taken out as far as possible during the tropical summers in the cool of the early morning. Venetians or other efficient blinds should be kept drawn during the day while the sun is on the nursery to keep it cool, and outside awnings should always be provided.

Journeys.—Infants during long train journeys and sea voyages should sleep as far as possible in a well-padded basket in order to minimise the effect of the movement and vibration, and the half of a Japanese dress-basket forms a cosy and easily portable cradle. If cabins are chosen near the bathrooms, much trouble is saved in the cleansing of bottles and napkins.

In regard to feeding, Glaxo or condensed milk, or, failing these, one of those foods permissible for use under these circumstances (see p. 118), are, I think, greatly to be preferred for bottle babies to the sterilised milk in use on many of the liners, or to that of cows living under such unnatural conditions. It is very advisable to get the baby accustomed to the new food a little while before the journey is undertaken. Specially sterilised infant's milk in bottles, to be kept in the ship's "cool room," is supplied by the Walker-Gordon Company (see Chapter VI.) for ocean journeys. A tea-basket fitted with a good spirit-lamp is very useful, and a Thermos

bottle for keeping water warm. For older children a good supply of biscuits, and a tin of Glaxo for preparing a cup of milk, are to be recommended.

A woollen hood or cap with ear pieces will be a useful precaution against the draughts often experienced on board train or ship. Shady straw hats with veils for tying on should be provided for the steamer; and for passing through the Tropics thin overalls and sandals should be handy, and a supply of bicarbonate of soda and boracic acid for the baby in case of prickly heat. A little castor-oil and fluid magnesia may also be useful, since children are frequently upset by travelling.

Comforters.—It is held by some authorities that comforters should never be given to the child to suck, as these, like continued sucking of the thumb, are said to produce a deformity of the roof of the mouth which tends to displace the teeth, and they are also said to be a factor in the production of adenoids. If, however, the undoubted convenience attendant on this method of soothing a temporarily fractious baby is thought to outweigh the above theoretical disadvantages, the comforters must essentially be cleansed like the teats (see Chapter VII.); one which has dropped to the ground should not be used again before cleansing, and their use should be as restricted as possible.

Modern Fads.—Mothers will be well advised to keep clear of fads and crazes, with which this present age abounds, in the rearing of their children. These do not always harm adults, but they may do much harm to children. It should not be a mother's aim to rear her children with Spartan-like hardness any more than by coddling them on hot-house lines. The "no hat craze" for healthy children in temperate climates, where the sun is never very hot, and in the absence of cold winds or damp, or teething, while I would not recommend it, may be quite safe, but the "barefoot craze" should be strictly avoided in any climate. She should not feed them on special vegetarian or "no meat" diets; nor without advice on prepared sour milk, of which not all preparations are safe to use; nor resort to popular force-producing foods or frequent dosage with patent or homœopathic medicines without her doctor's advice; nor, if she does not believe in the reality of disease, should she deprive her children of medical care and remedies if they are ill.

PART II

FEEDING IN INFANCY AND CHILDHOOD

CHAPTER V

BREAST FEEDING

“The wee, wet kiss against my lips,
The warm head in its shoulder nest.

These common riches of the race
Are past all gains of pelf and place.

Choose as you will ! My choice is best ;
The little life across my breast.

How poor I were had I not pressed
This little life against my breast !”

—E. V. COOKE, *Chronicles of the Little Tot.*

Advantages of Breast Feeding.—If it is understood how great a difference obtains between breast feeding and bottle feeding, and how imperfectly we can imitate the child’s natural nourishment and method of obtaining it, the advantage to the breast-fed baby is better appreciated, and no less the significance of a child’s loss when it has to be hand fed.

Breast milk as the baby drinks it is a *living* fluid fashioned by the living cells of the mother’s breast out of the nourishment brought to them by her own blood. It is absolutely pure and free from germs. It is taken directly into the baby’s stomach at the temperature at which it leaves the breast. Its ingredients are specially adapted, not only to the needs and digestive organs of the young *human* animal (see p. 100), but designed to educate these gradually to perform their functions as it becomes increasingly stronger.

Cow’s milk, which alone can be considered as a convenient and safe substitute for breast milk, since patent foods cannot build up a sound constitution, was when it left the udder a living fluid at the body temperature, pure and free from germs. But it has long lost its first vital properties, has gone through many changes of temperature in its heating and cooling before it reaches the baby’s stomach. And in the very process of being milked, and even more in its

inevitable handling afterwards, it has been exposed to germs which abound in the air and all about us. Its ingredients are designed for the needs and capacities of the digestive organs of the calf, which are very different to those of the baby.

The method, again, by which the breast baby obtains its nourishment is different from that by which the bottle baby obtains it. No bottle and teat, which can be efficiently cleansed, can be so modelled as to perfectly reproduce the human breast, though better results have recently been obtained than hitherto. The breast is so constructed that the baby draws the milk, a small quantity, first of all into a reservoir beneath the nipple. It then, by compressing the nipple or chewing it with its gums, presses this milk into its mouth, and then swallows it. The nipple itself is firm, short, and broad, and during suction uncollapsible, and the breast slopes very gradually into it, and affords the baby a base of support during sucking.

In the case of the bottle the baby's effort is all expended in drawing the milk through the teat chiefly by suction, and there is little of the compression of the teat and chewing action of the jaws which should be natural to the baby, since the milk enters the mouth directly and the teat collapses with the baby's suction. According to the baby's strength and the size of the teat aperture, and the regulation of the valve at the lower end of the bottle where such exists, the child gets the milk fast or slowly, often much too fast.

One need say little of the ethical value to baby and mother of breast feeding, since it is so self-evident. The breast-fed baby looks to its mother for the first essential of its life and development, and finds much more than the mere satisfaction of hunger, as its evident content and happy placidity after a satisfactory nursing always testifies. What the mother, "whose life-blood is transformed at no small cost into a wonderful fluid designed for the use of the other," and who lives during these days of suckling necessarily almost entirely for her baby, gives for it and does for it is not a small act of unselfishness and love.

It is not possible to pass over the subject of breast feeding with a few words, since it is one of great importance to women, and its decline, especially among the upper classes of society to-day, is a very grave consideration from a national point of view.

It will be obvious from the above facts that it is of incalculable benefit to a child if it can be breast fed, even if this, owing to an

imperfect milk supply or other difficulty, can only be done for the first few weeks of life, or has to be supplemented by hand feeding. This ensures the baby a better start, and usually means a more perfect digestion throughout its infancy.

Cow's milk always imposes a greater test on the baby's digestive organs than its own natural food, and it seems especially necessary that they should first get used to performing' their functions without this difficulty. Hence the hand-fed baby has a far better chance if it has been breast fed though if only at first, though never so good a chance as when breast fed throughout.

The frequent preparation of a bottle baby's food, involving as it does so many special and absolutely essential details of cleanliness, measurement, and heating, and the frequent digestive disorders to which the child is always liable, and rarely escapes, mean far more time and trouble for the mother than feeding a child at the breast, though she often does not realise this until she begins to manage hand feeding, when it is too late.

There are some cases where, however much the mother wishes it, she cannot nurse the baby, as when the secretion of milk ceases—the commonest cause of all—or when her health is indifferent, or when she is suffering from some constitutional disease which renders it undesirable, or when the nipples are unsuitable; but these cases will be, I believe, more rare if women order their lives healthily during girlhood, and before as well as during pregnancy. If they will, let us say at any rate if they ever hope to be mothers, cultivate steady nerves and self-control—if they will avoid the nervous overstrain of successive late nights spent in gaiety or excessive study, realising that such constant excitement or mental stimulation cannot produce that evenness and serenity of mind which a woman built to be a mother must needs cultivate in her emotions and judgments, and in all the conduct of her daily life. If they will in their realisation of a "higher education" cultivate an ambition for a capacity and efficiency of mind which the ornament of specialised intellectual achievement and academic distinction can never take the place of, and above all aim at a physical culture which will develop supple and well-toned muscles, *rather than at hard athletic training*; if they will avoid tight or unsuitable clothing, especially the wearing of corsets with high, unyielding busts, which confine and press upon the breasts; excessive smoking, or the habitual use of stimulants.

It may be truly argued that motherhood is a profession to which many are called, but few are chosen ; but mothers will act in the best interests of their girls, I believe, if they so arrange their lives that no one factor enters into them which might compromise it, or which could be incompatible with the discharge of its great functions.

Mental State.—The nursing mother must lead an essentially *even* life, devoid, as far as possible, of all factors that tend to produce nervous strain or excitement, and of excessive physical exertion. The child's nervous system and digestion may both separately be affected to a marked degree by the breast milk. Therefore, if her baby is to thrive by reason of its digesting and assimilating its nourishment well, and also by the building up of an equable nervous system and a happy, contented disposition, the mother must avoid all fits of anger and irritation, all frights and emotional outbursts, periods of depression and worrying. She must always remember to *wait* to cool down after an exertion or mental upset before putting the baby to the breast, since these alter the milk in such a way as to upset the child. Worrying and depression, like sudden illness or poor health, tend to lessen the supply of milk.

Diet.—The diet of the nursing mother must be very carefully regulated. She undoubtedly "eats for two" now, and her diet must be especially nutritious, and must include more *fluids* than usual, but these must be of a specially nutritious nature. The diet must also be specially digestible, since indigestion and flatulence in the mother frequently induce these conditions in the baby. All green vegetables, and even ripe raw fruits, must be taken with caution while the mother ascertains by experience those which she can take without disturbing the child. This remark will especially apply to grapes, grenadillas, strawberries, and green figs, and such vegetables as tomatoes and maize from the cob. Raw salads, all sour fruits, shellfish, pork, rich seasoned dishes, curries, tinned foods, pastry, new bread, and stimulants, must form a list to be strictly excluded. Alcohol, which has no power of improving the quantity or quality of the milk, passes through the milk to the child, and is not well tolerated by a young baby's stomach, and in hot weather especially it is detrimental to the milk. It should therefore never be taken during nursing in any form, unless medically ordered in the interests of the mother's own health. Tea and coffee also should be very moderately drunk. The diet must be free, varied as well as nutritious. Red meat should be

taken only once a day, preferably at midday. If eaten oftener, unless much exercise is taken, the milk becomes too strong and indigestible for the baby. Thick lentil and dried pea soups are, with Plasmon added, especially valuable; cereals; and whole-wheat such as Hovis bread rather than white bread, poultry, and eggs and cream, and all nutritious and easily digestible farinaceous milk puddings, and light batters and steamed puddings. Plasmon jelly (see *Recipe*) taken in foods or drinks is very much to be advised. The evening meal should consist of poultry, fish, eggs, or bacon, with some warm nutritious fluid; and breakfast, with the addition of well-cooked oatmeal, maize, or wheatmeal porridge and stewed or fresh fruit, should be a similar meal. A breakfast-cup of milk or chocolate, or of Plasmon cocoa, or of Hygama,¹ a highly nutritious cocoa drink, which is much to be recommended, should form an eleven o'clock lunch. A good basin of oatmeal milk gruel (see *Recipe*) containing Plasmon jelly should be taken at bedtime. If the mother dislikes this, or tires of it, she may vary it with barley or wheat gruel, Benger's food, or Frame food, but she should not forget that oatmeal is an excellent milk producer. If such foods do not agree with her, she should take a basin of Benger's food, stood for half-an-hour, or failing this, Allenbury's Diet food (quickly prepared with water), which are predigested, and the former is to be very much recommended.

In cases where the milk is poor in quantity or quality *more red meat should be taken* and regular exercise up to the point of gentle fatigue; a good malt and cod-liver oil preparation, such as Bynol or Maltine and cod-liver oil, may prove useful, or Virol may be taken. Or two or three teaspoonfuls of good malt extract, such as Maltine or Kepler's, after porridge, farinaceous milk puddings, gruel, and other starchy foods will sometimes improve the milk.

Fresh Air and Exercise.—The mother should, like her baby, spend as much time as possible in the open air, and regular walking exercise should be taken for *at least an hour daily* during the whole nursing period. The milk is often too strong for the baby, and gives it indigestion if this exercise is not taken. No tennis or dancing or other games should ever be undertaken by a nursing mother.

¹ Obtainable from Theinhardt's Food Company, 6 Catherine Court, Seething Lane, London, E.C.

Rest.—A midday rest is an advantage, and good long nights are very essential to the nursing mother; hence she should not only retire early, but the baby should be carefully trained to sleep all night, at any rate at the end of the third month, without waking, and before this age only two feeds at most should be given during the night. If the baby wakes and cries, refusing to be soothed after two feeds have been given, a bottle of sweetened water or barley water should be given to it, but it should not be put to the breast.

Bowels.—The regulation of the bowels needs special attention, and these should be opened every day. The child frequently suffers from constipation if the mother is constipated. She should eat whole-meal bread to vary Hovis, especially with breakfast, and should take coffee freshly ground daily at the same time, and should eat stewed prunes or stewed figs or rhubarb and suitable fresh fruits as abundantly as she finds she can without upsetting the child. All these, together with cream and plenty of other fats, and plenty of water, *which a nursing mother should always drink*, tend to keep the bowels regular. If twenty-four hours elapse without a motion she should take a soap-and-water or olive-oil enema, and only if this is unsuccessful should she resort to taking medicine. Most aperients affect the child, causing it griping and diarrhoea, particularly in its earlier months. The most suitable aperient for the nursing mother in my experience is “cascara evacuant” (not ordinary liquid cascara), and of this she should take a quarter of a teaspoonful in a little water three times a day, and up to half a teaspoonful at a dose if necessary. Failing this a teaspoonful of compound liquorice powder may be taken, but this will usually gripe the baby. Salts and magnesia, which tend to dry up the milk, should not be taken, and for constipation which will not yield to the above-mentioned treatment the doctor’s advice should be sought.

Drugs during Nursing.—No medicines of any kind can be taken during nursing without a possibility of their affecting the child, and therefore the mother will do well not to take such unless medically prescribed for her at the time; and she should most carefully avoid taking any pain-relieving or sleep-producing drugs, especially opium in any form, which is exceedingly dangerous to young children.

The Monthly Period.—The monthly period is usually absent during suckling, but it may occur, and if it does it generally alters

the milk in such a way as to disturb the baby. This disturbance is not usually serious, but if the child shows signs of indigestion, vomiting, or colic or flatulence, it should be given two or three tablespoonfuls of thin barley water (see *Recipe*) slightly sweetened, or a tablespoonful of lime water just before each nursing, which will often rectify the condition.

Pregnancy.—This may occur while the mother is suckling, with or without re-establishment of the monthly flow. The mother's first indication may be signs of indigestion, fretfulness, or sickness in the child, or it may cease to gain in weight. The milk supply may diminish and fail to satisfy the baby, or the mother's own health may become poor, and in such cases it would be wise to seek advice before weaning. If, however, the child is not disturbed and the mother's health continues good, she may continue to nurse for the first five months.

Illness.—Should the mother be taken acutely ill at any time, the baby should not be put to the breast: it should be given feeds of sweetened barley water or sweetened egg-white water (see *Recipes*), and the breasts should be relieved by the apparatus shown in Fig. 14, which should be used *at the regular nursing hours* until the doctor arrives.

If the mother's health becomes poor during suckling she should investigate her diet and ascertain whether she is taking one which is sufficiently free and nutritious, and whether her digestion is good, and whether she is excluding all indigestible items. If she continues to feel run down, or out of sorts, or if at any time during the nursing period she is troubled with constant headache, giddiness, depression, or faintness, she should seek medical advice, since suitable tonics and other treatment will often enable her to continue nursing.

Nursing of Twins.—In the case of twins, both babies should share *equally* the breast milk supply. But very few women have sufficient milk for two children, and therefore the breast milk will always need to be well supplemented by suitable hand feeding, and the children should have alternate breast and bottle feeds.

Wet Nursing.—In those cases where the mother is unable to nurse, and no substitute feeding will suit the child, a wet nurse, temporarily, will often save its life, and this should always be tried wherever possible in such cases. The doctor would advise in the

selection of the nurse, and her daily life and diet should be regulated on the lines indicated for the nursing mother. She should be allowed no stout or other stimulants, which she will generally ignorantly think indispensable to successful nursing. There will often be a little difficulty in getting the baby to take the breast at first, but this with patience is easily overcome. If the child is very ill and weak, the milk should be drawn off and fed with a spoon. If able to suck (and it is very inadvisable to wait until it cannot before trying a wet nurse), but unwilling, the nurse should press out a little milk with her fingers as she directs the nipple into the baby's mouth, and try, by soothing and "mothering" it, to induce it to take the nipple. A little white sugar may be dusted over the nipple, or a little glycerine smeared over it; or sometimes the child may advisably be starved for a feed or two in order to make it sufficiently hungry to take the breast.

If a wet nurse cannot be retained in the house, a healthy woman with an abundant supply of milk may sometimes be found within reach to undertake the baby after the doctor's examination and sanction. In such case it is not advisable to give the child up to her for the night feeds, since there are many risks to the baby of possible exposure to undesirable conditions in such a procedure. One or two artificial feeds are usually well taken by the baby if it is for the rest entirely on the breast. It is important to see in such cases that the wet nurse feeds herself well at home, and it is incumbent on the mother to give instructions to the wet nurse for the suitable hand feeding of her own baby.

Nursing Corsets.—"Nursing corsets" are not to be advised, as they impose a degree of pressure on the breasts which has a real element of danger as regards the breasts themselves, and which in some cases tends to retard the flow of milk. Women who wear the only truly hygienic corsets (described in Chapter XVI.)—those which are cut specially to the figure and entirely below the level of the breasts—will need no substitute during suckling. Some support may, however, be felt to be necessary for the breasts, in which case a binder made of nainsook or butter muslin, fifteen inches wide and one and a quarter yards long, should be swathed firmly round the bust, and securely pinned across the middle of the body.

Care of the Breasts.—*During the first month of suckling* the nipples should be washed with a clean soft rag dipped in a saturated

solution of boracic acid, with just enough hot water added to take off the chill before and after each nursing. Before each nursing this should be carefully washed off with plain boiled water, and after the nursing and boracic bathing the nipples should be carefully dried. *After the first month* the boracic solution should be used night and morning, and the nipples should be washed with plain boiled water before and after each nursing, and kept carefully dry between feedings. If the milk oozes, a little pad of cotton wool or perfectly clean rag should be kept over the nipple. This particular care of the breasts is the best way to guard against that most painful affection, inflammation or abscess of the breast, which is the result of infection by germs gaining access through a visible crack, or a possibly unnoticed abrasion of the nipple; and it is also the best way to ensure a perfectly clean and unsoured supply of milk reaching the baby, since its delicate digestion is easily upset by milk which has become sour by drying on the nipple.

Cracked Nipples.—If a sore crack should appear on the nipples at any time during the nursing period, it should have immediate and thorough treatment. The nipple should be bathed with the boracic solution after *each* nursing. It should then be covered between nursings with a bit of “gauze” or clean rag well soaked in friar’s balsam. This should be well sponged off before nursing, *and a glass or rubber “nipple shield” should be worn during the nursing.* If this treatment does not heal the crack within a few days, advice should be sought.

Method of Feeding.—The baby should be fed regularly by the clock, according to the correct intervals for its age indicated in the Table of Feeding on p. 133, and under no circumstances should it be given anything other than drinks of boiled water between its feeds. Kittens and other young animals seem to get no harm from suckling constantly, but the human baby, whose digestive functions are more highly organised, cannot thus overload its stomach without risk of indigestion, which means for it wind, pain, fretfulness, and sickness. The mother’s breasts also require a rest, for if too frequently drawn the milk is not uniformly good; it is too rich soon after being drawn, and poor and watery after too long an interval. The breasts should be well filled and *firm* just before nursing, and *each breast should be used alternately.*

The mother, holding the child on her arm, should bend over it

so that the nipple falls into the baby's mouth, and she should press back the breast on either side of the nipple with two fingers, so that it does not cover up the baby's nose and make its breathing difficult. It is important to see that the baby has got a good hold of the nipple, which a first baby sometimes has trouble in doing at first, and that the milk flows easily, so that it gets its due amount without difficulty, which can sometimes be effected by gentle pressure on the breast directed towards the nipple; and conversely, to note that it does not take its food too fast. Like other hungry and vigorous little animals the baby has no discretion, and may satisfy itself too hurriedly, with disastrous results to its digestion in many cases if allowed to. The mother can to some extent regulate the flow into the baby's mouth by *pressure* of the nipple between her two fingers.

The baby should not, in the writer's opinion, be taken away from the breast until it is satisfied and voluntarily loosens its hold on the nipple. Breasts vary in regard to the ease and rate at which the milk flows, and one breast is sometimes slower than the other. If we are to limit the child's time at the breast, we must ascertain, by a method which in cases in which the baby is not thriving is sometimes adopted, how long it takes to get the amount suitable for its stomach capacity at its age. And this amount again varies within certain limits in different babies. The child's mother's milk is so digestible, if it is thriving on it, that it can get little harm from taking its fill, but it must feed slowly, and if it is gulping and swallowing greedily, the nipple should be compressed, or if necessary removed from time to time. Immediate return of a considerable portion of the feed, or vomiting, or signs of indigestion when the feed has been taken slowly, would lead the mother to suspect that the feed was larger than the baby's stomach could hold, and she might then try allowing a shorter time, and if the condition does not yield she should seek advice. The stomach is an elastic bag, which can stretch considerably, but continued overstretching destroys its elastic properties, renders it flabby and unable to digest well. If the baby pulls impatiently and with difficulty, becoming hot and fretful, and as a rule remaining longer than twenty minutes at the breast without being satisfied, and whining or fretting constantly afterwards, or if its weight is not increasing as it should, it is probably not getting sufficient, and advice should be sought, without which weaning should never be undertaken.

Supplementary Bottle Feeding.—At the end of the second month the mother may, if she likes, begin giving one feed a day from the bottle. This is, if the baby is thriving well, an advantage, as it leaves her free for any special social interest or duty which may arise at any time, and it saves much trouble if she is called away from home, is taken ill, and when the weaning time comes. It should in any case be begun about the fifth or sixth month, if not earlier. Sometimes supplementary feeding will be necessary because the milk supply is insufficient, and the baby is not satisfied or gaining in weight as it should.

The bottle feeding should be very carefully managed in all cases, according to the special directions given for supplementary bottle feeding in Chapter VII.

Weaning.—If the baby is thriving, and the mother is in good health, weaning should not be begun until the child is nine months old. Nursing should, however, never be continued after this period, since breast milk falls off considerably in its flesh-forming and fat ingredients at this time, and hence fails to afford the child sufficient nourishment, though the effects may not be obvious at the time. Too prolonged nursing also is a drain upon the mother's strength, and its effect is bad upon the breasts themselves. It is not, however, advisable to begin weaning in very hot weather, or if the baby is not very well or cutting a troublesome tooth, and in such case it should be postponed for a little while.

Weaning is usually rather a trying time for both mother and baby, since the baby grieves over and is often not a little indignant at the deprivation of his accustomed right. It is a far less trying time if he has been used to a daily bottle all along. Smearing the nipple with aloes and other similar methods of trying to make the baby dislike the breast should never be adopted, but if the mother has no nurse it is very advisable for her to get some one temporarily to take charge of the child.

One breast feed should be dropped every few days, and replaced by a bottle feed. If the child absolutely refuses the bottle, after being allowed to starve sufficiently long to make such acceptable, he should be fed *slowly* with a cup and spoon, and babies do quite as well in this way as on the bottle. For the food to be given see *Feeding after Weaning* in Chapter VII.

If the weaning is *gradual*, as it should be, the mother will not

experience much discomfort at any time. If the breasts become painfully distended she should press out enough milk with her fingers to relieve them, or, if this is insufficient, should draw off a little with the apparatus shown in Fig. 14, but excessive use of this will tend to keep the milk flow going, and a breast-pump should

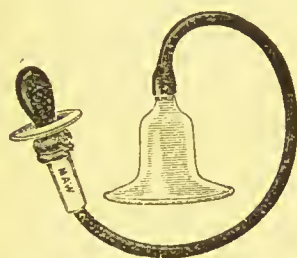


FIG. 14.—Breast suction apparatus.

never be used. She should drink as little fluid as possible, and as the baby becomes satisfied with the new feeding she should take a teaspoonful dose of salts (see *Medicine Cupboard*) three times daily for a few days, or a larger dose if this does not produce fluid motions. Hot fomentations should be applied (see *Fomentations*) if the breasts are very tense and painful, and they should be supported by a firm binder, as described under the section on

Nursing Corsets. Plasters should never be used unless medically ordered; and if hard, painful lumps form, or much pain is experienced, or if a red and tender spot should appear, now, or at any time during suckling, the mother will be well advised to see her doctor at once, as the breasts will need special treatment and expert bandaging.

CHAPTER VI

INFANT NUTRITION AND PROPERTIES AND ESSENTIALS OF FOODS FOR ARTIFICIAL FEEDING

“All whose experience entitles their opinions to consideration are agreed that *some modification of fresh cow's milk* is the only reliable substitute for breast feeding.”—EMMETT HOLT, M.D., Sc.D., LL.D., Professor of Diseases of Children, Columbia University, New York.

Physiology of Nutrition.—A knowledge of the processes which the food undergoes before it becomes a part of the body, as also of the properties of the various foods, is essential to the mother not only of the infant but of the growing child.

Nutrition is a separate consideration in the child and the adult. The child's, and especially the infant's, actual growth and development depend upon it, for whom growth means not only length and breadth and weight, but development of each organ and function and therefore nutrition during childhood is a question of very first importance. In the adult, nutrition is necessary only to maintain the functions of the body already grown. In all cases it involves the three separate considerations of the food eaten, its digestion, and its absorption. It is important for the mother to realise the meaning of these terms. For good nutrition of the body there must be a due supply of the materials essential for the building up and renewing of the body tissues, good digestion and good absorption; that is to say, the food must be suitable, and it must be efficiently dissolved, and then carried from the digestive organs to all the various parts of the body, where it must enter into and become a part of them. Hence unsuitable food given to a child who appears to the mother to be “able to eat anything,” though it may not apparently upset the child, does not efficiently nourish it.

Digestion.—This implies simply the *change* which must take place in the food eaten before it can be absorbed into the body

tissues, and this change is brought about by its admixture with certain juices formed in the glands which produce the saliva, the stomach, liver, and bowels chiefly. That part of the food which cannot be changed, or is unnecessary to the body, collects and passes from it as the urine and fæces.

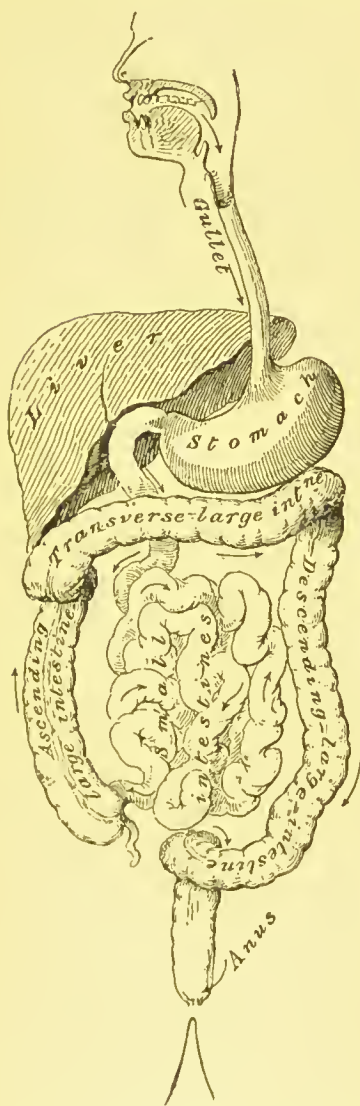


FIG. 15.—Human digestive tract.

Absorption.—This, which implies the passing of the changed food into the blood stream, which carries it to the body tissues, takes place chiefly in the small bowel. The bowel is lined by a fine velvety “pile,” and each tiny process composing the “pile” contains a network of minute channels, through which the food passes, now in the form of a milky liquid in which the solid part exists in a finely divided state, and enters the blood stream.

Properties of Foods.—There are certain definite ingredients in foods, and there are roughly three, which are most important for nutrition. Some foods consist for all practical purposes of only one, while others are made up of one or two, or all three. The ingredients may be named, according to the part Nature intended them to play in the nourishment of the body—the flesh-forming, the fat-forming, and the heat-forming. They each overlap, and one class to a certain extent assists the other, but in the main each has its own par-

ticular function to perform, and if either is deficient or excessive in the diet, digestion and nutrition suffer accordingly. The white of an egg, whey, Plasmon, and lean meat are types of the flesh-forming foods; butter, cream, yolk of egg, bacon fat, of the fat-

forming; sugar, Mellin's food, barley water or gruels, porridge, corn-flour, bread, potato, are all types of the heat-forming foods; and milk is a type of food which contains all three chief ingredients. The flesh-forming constituents undergo a great change in digestion, and also the heat-forming *starchy* ingredients; the fats not so much.

Certain substances which exist in *fresh* foods, and which are destroyed if these are subjected to prolonged heating, or preserving processes, are also necessary in nutrition. Life may be maintained without them, but the health suffers if they are absent from the diet for more than a few weeks, and sometimes a definite disease, *scurvy*, results from this deficiency. For this reason North Pole explorers, whose travels carried them beyond the reach of fresh food and vegetables, and those besieged, have suffered from scurvy, which is not a skin disease, as its name would imply, but a blood disease; and babies also who are fed entirely on a diet of preserved foods not only often develop a form of this disease, but show imperfections in their nutrition, general health, and development.

Certain substances, or "salts," which help to build up particular body tissues, such as those which are bone-forming, are also present, very especially in the foods which Nature designed for the use of young animals, such as milk and eggs.

Young animals whose digestive organs are undeveloped require a due proportion of each of these ingredients in their diets, and they find them in the food which was specially manufactured for them by their mothers, viz. milk. It is important to realise, however, that a milk is adapted by Nature to the particular animal it was intended for. Although all milks possess properties in common which justifies their grouping under the one heading, they are not all one and the same food, since they vary in composition according to the digestive organs and nutritional needs of each animal. It is only by studying the particular structure of the stomach and bowel in each case of the cow, goat, sheep, horse, and human being that the very great difference which obtains in all these "digestive tracts" can be appreciated. It is well known popularly that the calf has "four stomachs," that is, 70 per cent. of its stomach and bowel tract is available for digestion, while the human child has only "one stomach," and only 20 per cent. of its whole tract is available for digestion. Hence the baby requires not only the essential food ingredients for its nutrition, but that they should be given in such a

form that its digestive organs can deal with them satisfactorily, and in this form they exist in human milk.

The modification of cow's milk for an infant's use is discussed more fully in the subsequent chapter, but the mother, if she would really understand it, must remember all these essential points concerning separately the immaturity of the baby's organs, its digestive capacity, and its nutritional needs, which may be summed up as follows:—

1. Each milk is specially designed for the use of a particular young animal.
2. The digestive organs of a baby are in comparison with our adult organs undeveloped, and have to gradually learn their work. If the nourishment is suitable for them, it gradually educates them; if it is unsuitable, the strain on them is greater than if they were developed.
3. The baby's nutrition requires a due supply of each of the necessary food ingredients, and this is an essential consideration from the beginning of its life.

Human milk alone fulfils the above essential conditions for the baby; it imposes no tax on its immature digestive organs and gradually educates these, and its ingredients efficiently nourish the baby from the beginning. In the case of hand feeding with cow's milk, particularly during the first two or three months of life, when the baby's difficulty with cow's milk is greatest, since we have to deal with undeveloped digestive organs, we have to use a food which imposes a strain on these, and in order to lessen this we have to use the milk so weak, that the baby's nutrition cannot be maintained as it would be if it had breast milk. Furthermore, milk, on account of the time which elapses before it reaches the baby, and its special attractiveness to germs, may be a very dangerous food for it; yet cow's milk is, in spite of all these difficulties, if properly used, the child's best substitute food.

All these facts will indicate to the mother the difficulty and risks which hand-fed babies must always incur. There is, I think, no more solemn duty in a woman's life than to nurse her child if she is able. If she is not, there is but one motto for the mother of the hand-fed baby, and that is *labor omnia vincit*, translated freely, "Incessant pains, the end attains." Only special knowledge, time, and care will steer the baby safely through, especially the earlier

months of that period of its life when milk must be its main diet, and at the same time build up for it a sound constitution.

A Pure Milk Supply.—London was startled some few years ago by the popular diffusion of the fact that out of one hundred children born in large towns sixteen die under one year of age, the mortality being due in about 40 per cent. of the cases certainly to digestive troubles, and probably more indirectly to these; and the economic importance of this high infant mortality *from preventable causes*, in view of the steadily decreasing birth-rate in England, has occupied a good deal of attention lately. In Johannesburg, where the infant mortality was referred to by a writer in 1905 as one in five (or twenty out of every hundred) of all white children born, and in more than half these cases as being due to digestive disorders, and where the ill results of unsuitable feeding have been so forcibly brought home to me in practice, the question, from an Imperial point of view, has an obvious importance.

The child's battle with the digestion of cow's milk belongs largely to the mother and the physician, but the risks it incurs lie chiefly with the State. It has long been realised that the infant mortality in a district has a direct relation to the milk supply of that part, whether it is pure or impure, and a pure milk supply means a milk supply which is controlled by the Government, according to certain definite laws laid down by experts, concerning the care and feeding of the cows, the milking, the quality and conveyance of the milk, and delivery of it to the consumer. In many of the chief towns of America, as the result of the efforts of leading physicians and dairymen of standing, a very pure milk, known as "certified milk," has been brought within reach of those who can pay for it. In Copenhagen the milk supply has, by the co-operation of the Government, been made very pure. In London a pure and suitable milk, specially produced for infants, is available for mothers who can pay for it (see *Walker-Gordon Milk*). In England generally many dairies exist now which produce a very tolerably good and rich milk at market prices, but this, though its quality is good where reliable dairies are chosen, is rarely ideal for infants, often much too old, especially in towns, and often questionably pure. In the Colonies, where special difficulties, due to climate, pasturage, disease, and other factors often exist, the milk is not infrequently very poor, unsatisfactory, and indigestible, and even dangerous for

infants ; and for this last characteristic, referable only to ignorance or carelessness, no excuse can be found. Wherever white children are being reared the milk supply becomes a national question of first importance, one to which all mothers should turn their attention, and this they will do when they realise what the conditions of a pure and safe, if not of an ideal, milk supply are, and no less the dangers which surround not only infants, but weaned babies and toddling children who must drink so much milk in those important years that must elapse before they can adopt an adult diet. It is the mothers who must educate public opinion—be “suffragettes” for their children’s “rights” ; and where necessary induce those who administer the country to bring this question of national importance into the sphere of practical politics, and to give it an early place among the many and difficult questions with which they have to deal.

Management of Cows and Milking.—Mothers in England, who either buy their milk or keep their own cows, and those families in the Colonies, at any rate, who keep their own cows, and can ensure their own pure and suitable milk supply, should emphatically be able to rear their children on cow’s milk, which is the only safe and convenient substitute for breast milk.

For those mothers in England and the Colonies who have their own cows, the following paragraphs may be useful ; but *all* mothers should have a knowledge of the conditions which should essentially obtain in the production and handling of cow’s milk which is to be used for infant feeding.

The Milk of One Cow.—The milk of several cows is very much to be preferred to that of one cow for infant feeding. Its standard will be more evenly good, because the milk of one cow varies so much at different times, and when poor in quality the milk will be improved by the addition of the good milk of other cows. And also, if anything goes wrong with the milk through anything the cow may eat, or with its own health, the child will suffer less if the milk is mixed with and thus diluted by the milk of other cows.

Selection of Cows.—In the selection of infants’ cows it is necessary to know something of the different breeds of dairy cows most generally used, and the characteristics of the milk of each ; and in the case of imported cows, those which preserve their good points and do best in their new environment, and which are thoroughly acclimatised.

Well-acclimatised Jersey and Guernsey cows give the richest milk from a cream standpoint, and it would be well, therefore, if such a cow were included in the herd in order to bring up the richness of the milk. The fat in the milk of these cows, used undiluted by the milk of other cows, is, however, not very easily digestible, and also it is said that such cows are not so easily kept healthy as others. Therefore, while it is *very advisable* to include such a cow, the herd is best made up of mixed breeds. In England the ordinary Shorthorn cow, with her good yield of rich milk, would be selected as in every way satisfactory for infant feeding. The little Ayrshire cow, in a suitable environment, is very satisfactory in England, and the improved Kerry is a hardy little cow and a good milker. The Friesland (known in America as Holstein) cows, which are the most generally used in the Transvaal, are, out of their Dutch environment, in general more noted for their milk yield than for its quality. The milk of such cows is strong enough in flesh-forming ingredient but poor in fat, and hence they could never be ideal cows for infants, whose difficulty in digesting cow's milk lies in the former element, and who so essentially require the latter. The "Cape Dairy cow," which consists of the mixed strains of Friesland, Jersey, and Kerry, the Friesland predominating, is, I am told by a local expert, the most to be recommended for general use in South Africa. It would be very wise to include a good Channel Island cow in a herd of Frieslanders to bring up the fat of the milk. It must be remembered that while it is very necessary to *feed infants' cows well* in order to keep their health and nutrition at a high level, and to keep their milk yield and general quality good, *it is not advisable if possible to attempt to increase the fat in the milk* by any special feeding.

Tuberculin Test.—It is very essential that any cow used for infant feeding should have passed the *tuberculin test*, which certifies it free from tuberculosis at the time of testing, and also that it should be regularly inspected by a qualified veterinary surgeon, preferably every three months. This inspection, which should especially include an examination of the udders, is necessary to ensure that the cow has not developed tuberculosis. Cows are particularly liable to this disease, and to feed a child with milk from udders which are affected with it, is to feed it with the germs of consumption. Scalding the milk is one great safeguard against

the danger of infection, but whether or no this is done, it cannot be too strongly insisted that *all cows used for infant feeding must have passed the tuberculin test, and must be regularly examined by a qualified veterinary surgeon.*

Housing.—The cow-shed should be well lighted and well ventilated with large windows and a large door. Each cow should have a separate stall, allowing it plenty of movement, and ample space for its head and for lying down. It should stand knee-deep in clean fresh bedding. The floor, under which no drains should run, should be of concrete, sloped towards a gutter in the concrete so as to secure good drainage, and the walls should be whitewashed. All manure should be efficiently removed twice a day, or oftener if necessary, and the cows should never stand or be allowed to lie down in dung. The shed should be cleansed daily with an abundant flushing of pure water.

Feeding.—Pasture feeding is very advisable for cows in summer where sweet pasture, as in England, can be ensured, but in some parts of the Colonies it cannot, and in the Transvaal the coarse veldt grass, with its quota of weeds and “cosmos,” seems to render the milk specially indigestible to infants; little is known exactly on this subject other than what we see in practical results, but in any case pasture feeding there would be very insufficient, and stall feeding, *which we can control*, would be necessary to largely supplement it. The cows very essentially require exercise where pasture feeding is inadmissible, but the milder days should be chosen, as milking cows do not react well to intense cold.

The cow's food in summer should consist of plenty of fresh grass and clover, or lucerne, and should be supplemented by indoor feeding. In winter, mangel-wurzels (beets) and sound cabbages in moderation, and carrots or parsnips, which are much to be recommended, should supply the fresh food. Turnips should never be allowed, as these, like garlic, flavour the milk. The stall feeding should consist of plenty of green meadow hay, which for infants' cows should be fine and not coarse, or lucerne hay as green as possible. A good supply of bran, chopped moistened straw, especially bean straw, pea meal, “middlings” (coarsely ground wheat), maize (or mealie) meal, and crushed oats. A little cotton-seed meal may be allowed, but never linseed cake, which forms an oily, indigestible fat in the milk. No “brewer's grains” or sugar factory

refuse should be given under any circumstances. A due amount of salt should be given with the feeds or as a lump of rock salt in the stall, and there should be plenty of pure water in the trough at all times, and if possible in the pasture.

Care of the Cows.—If a cow is ill, however temporarily, its milk should be excluded, and also for two or three months before and a fortnight after calving. Cows vary so much, according to the time they have been in milk and their feeding, and also their age and breed, in the amount of milk they give, that it is difficult to give an average. From five to twelve quarts daily is perhaps the most usual quantity for a cow who is milking well, but it may give much more. It is very advisable to measure the milk drawn daily and enter this on a chart, as a sudden falling off in quantity is a sign of ill-health, and requires that the cow should be attended to. The average cow's best milking period is, generally speaking, for about five or six months after calving.

The cows should be treated with great gentleness, not worried or driven hard. They are sensitive animals, and such treatment has its unfavourable effect on their milk yield and quality. They should be groomed daily, when special attention should be paid to the hind-quarters, udder, and belly ; and they should be clipped over the udder, and tail, and hind-quarters in the autumn, and oftener if necessary.

Milking.—There are two essentials in milking :—

1. To prevent dirt and dust and flies from gaining access to the milk, since all these carry germs, which multiply and flourish in milk. To this end the cow should be milked in a clean, dust-free atmosphere. The parts of the cow in the neighbourhood of the udder should be cleansed immediately before milking. The milker should perform a special toilette. The pails into which the milk is received should be specially cleansed, and all vessels into which it is subsequently poured ; and in all the handling of the milk, it should be exposed as little as possible to the air.

2. To *cool* the milk as soon as possible after drawing it, and keep it cool till used, since this limits the growth of the germs ; and it is advisable to filter it before cooling, in the hopes of removing such contamination as may have got in, though this method is less certain than preventing contamination during the milking.

The milker should be made specially alive to the importance

of effectually performing the cow's toilette as well as his own before milking. He should wear a clean washing overall, should roll up his sleeves, and wash his hands and arms, and scrub his fingernails, and should not be allowed to practice the disgusting habit of spitting on his hands.

Nobody who is in contact with a person suffering from an infectious disease, or from consumption, typhoid fever, or dysentery, and no one who is suffering from a sore throat or poisoned finger, should handle the milk, as the germs of these diseases very easily gain access to the milk, and thrive in it, rendering it dangerous to those who drink it.

The milking should be done in a dust-free atmosphere, the ground about the cow being sprinkled with water. The cow's tail should be secured to a leg, or her hind legs tied together if she is refractory. The loins and hind-quarters and belly should be rubbed down with a damp cloth to remove loose hairs, dirt, and dust, and a sheet should be thrown across her loins. The udder and teats should be well washed with cold *pure* water (well water should be boiled for some time). The milk cans or pails should be by preference those with a small opening, which have been shown to greatly diminish the amount of contamination entering the milk during milking, and they should have well-fitting covers. They should be well scoured with hot water and soda after use, and sterilised before being used again by placing them in steam or boiling water, and boiling them for fifteen minutes.

The Milk.—The milk pail or can should be covered immediately after milking, and the milk then taken to be strained and cooled.

Straining may be done through absorbent cotton wool, which requires a special apparatus, such as the "Hygeia" (Dairy Supply Co., London), for domestic use. The "effective" straining material is good (Dairy Supply Co.), but muslin or gauze is unreliable. White flannelette is used and considered efficient by one large London dairy company, but the best and simplest straining medium seems to be a single layer of nainsook.

The milk should then be cooled down at once as near as possible to 40° F. (as tested by a milk thermometer), either by means of one of the special cooling apparatuses used in properly conducted dairies, or for home use by placing the milk in a refrigerator, ice water, or a freezing mixture. If none of these are at hand, some

such scheme must be devised as standing the pail in a bath or other receptacle sufficiently shallow and exposing it to constantly running water from a tap. A "domestic milk cooler," holding two or four quarts, and costing about 7s., may be obtained, made to order, from Welford's Dairy Company, Elgin Avenue, London, which is to be attached to a water-tap. Such methods will only cool the milk to the temperature of the water, usually between 50° F. and 60° F., but this should always be done. The *immediate* cooling of the milk to between 40° F. and 45° F., and keeping it at this temperature until used, is a great factor in preventing its becoming dangerous, and as this can only be effected by ice or special apparatus, these are very advisable if it is by any means possible to obtain them.

The milk, if it is to be sent away to the consumer, should be poured into thoroughly clean bottles, washed after use with hot water and soda and a bottle brush, and then sterilised before being used again in hot water or steam. The bottles of milk should be sealed with special air-tight stoppers or discs, and placed immediately into a "cool room" until delivery. They should be conveyed in the coolest and quickest way possible, either direct to the consumer, or to a *depôt* properly equipped with cold storage, whence they may be despatched with as little delay as possible to their destinations. They should be at all times, and especially in hot weather, delivered in refrigerating vehicles.¹ Milk which is carried round for delivery in bottles suspended in the pockets of a canvas bag slung across the shoulders of a native, in the blazing sun—is a most dangerous food for infants. Where the milk has to travel some distance, especially in hot weather, it should essentially do so in proper refrigerating vans, or in boxes covered by a layer of ice, since it must be kept below 50° F.

Milk should never be bought for children from a general shop, nor ladled out at the door from a reservoir can, nor should it be delivered in cans. It cannot be suitable for an infant's food if it is watered so as to contain less than 3½ per cent. of fat at least; nor can it be *fresh* unless it is delivered twice daily within a few hours of two separate milkings, and in a *cool* condition; nor *pure* if it is preserved by borax or any other drug, or coloured by annatto,

¹ The London Pure Milk Association delivers its milk thus, in summer.

egg-yolk, &c., to make it look rich ; but these evils again only rigid Government control and efficient inspection can guard against.

The Walker-Gordon Company (54 Weymouth Street, London, W.), whose farm and dairy, under expert management, exist primarily for supplying special infant's milk, deliver a reliable milk for infants, which mothers in London, who can pay sevenpence a quart, may avail themselves of, and also cream. In the "certified milk" produced in accordance with the regulations of the Milk Commissions (composed of medical men), and supplied at about the same price in New York and a large number of the chief cities of the United States, an ideal milk for infants is within reach of those who can afford it, and there is no reason why similar milk should not be produced in all our large towns, and there is in fact a pressing need for it.

"Nursery milk" is not to be recommended for an infant's use, chiefly because it is not possible to know exactly what it represents, and it may be too strong or too rich for the child, or in some cases is obtained from one cow.

Composition of Cow's and Human Milk.—Milk is composed chiefly of flesh-forming ingredients, fat, and sugar all dissolved or suspended in water. It contains also certain fresh substances, which are destroyed by heat or preserving processes. It is estimated that a single day's milk from one healthy cow contains as much of such fresh substances as would be yielded from two or three lemons.¹ Certain delicate substances also exist in milk which are designed to nourish special materials used in the building up of the body.

Properties of Cow's and Human Milk Contrasted.—The milk of both the cow and the woman are alike in that they contain flesh-forming, fat-forming, and heat-forming sugar ingredients ; fresh substances, and the special substances for the nutrition of special tissues of the body. But they are unlike in that (1) the *quantities* of the flesh-forming and heat-forming ingredients and the special substances are different ; and (2) the *form* in which the flesh-forming ingredients exist are different, and the way in which the two milks curdle.

The difference in the quantities of the flesh-forming and sugar ingredients will be seen in their comparison in the following table.

¹ Henkel, quoted by Dr. R. Hutchison in *Food and Dietetics*.

The figures represent the quantity of each ingredient in one hundred parts of milk in each case.

	Flesh-forming.	Fat-forming.	Heat-forming.
Woman's milk . . .	$1\frac{1}{2}$ -2	4	7
Cow's milk . . .	$3\frac{1}{2}$ -4	4	4

The second difference depends upon the fact that the flesh-forming ingredient in all milk exists in two separate forms, one very easily digestible, and which is not affected or curdled by contact with rennet, and the other more difficult of digestion, and which on contact with rennet is curdled—that is, forms solid curds.

The following table shows the proportion in which, according to the most recent work on the subject, these two types of flesh-forming ingredients exist in cow's and woman's milk :—

	Curdling.		Non-curdling.
Woman's milk . . .	1	to	2
Cow's milk . . .	7	to	2

In the differences in the *quantity* and *form* of the flesh-forming ingredients in cow's milk and the way in which it curdles lies the main difficulty in adapting cow's milk for a baby's use.

The fat in breast milk exists in a more digestible form than in cow's milk. Both milks contain perhaps the same proportion of the fresh substances which are destroyed by heat, but in the delicate special substances great differences obtain. One of these which is intended to nourish and build up the highly organised nervous system of the baby is found abundantly in breast milk, but only in small quantity in cow's milk ; while, on the other hand, another which is designed to build up the large and strong bones of the calf is found abundantly in cow's milk, but only in small quantities in breast milk.

Milk is absolutely pure as it exists in the breast or udder of a healthy woman or cow. But cow's milk after it is drawn contains germs which abound in the air and all about us, and to which milk is specially attractive ; and if not milked and cared for afterwards in an ideal manner, it contains more dangerous ones as well. Neither is milk before it is drawn sour as it readily becomes afterwards, and long before it really tastes sour.

The Digestion of Cow's and Human Milk.—When milk is swallowed and enters the stomach, the digestive juice of the stomach, which in the calf is known as rennet, converts the milk

into curds and whey—that is, clots it, as in the formation of junket. This change is necessary to prepare the milk for absorption into the body, and its incorporation with the various parts or “tissues” later. The whey, which contains the “non-curdling” flesh-forming ingredient, is very easily absorbed as such; but the curd, which is made up of the “curdling” flesh-forming ingredient, and also the fat of the milk, requires further digestion by the juices of the bowel before it can be absorbed.

When one adds experimentally rennet to human milk, the curd is formed as a light mass of soft, fine flakes easily broken up between the finger and thumb. But when rennet is added to cow's milk, a tough, dense curd of firm cheesy lumps is formed, which the baby's digestive juices obviously have more trouble in dealing with than they have with the soft flakes of the breast milk curd. Hence the baby with indigestion vomits and passes visible “curds,” which its digestion has been unable to deal with. The hard-curdling milk was intended for the animal with four stomachs and a stronger digestion, the soft-curdling milk for the baby with one.

It is important to note that raw cow's milk forms a harder curd in the stomach than cooked milk, and also that milk which is in any degree stale and sour forms a harder curd than perfectly fresh milk. From these facts it is obvious that milk which is heated will be more digestible for infants, and that the milk should be fresh, that is, used as soon as possible after milking. And since cow's milk, even when it does not taste sour, so soon develops more or less sourness or acidity, something which has the power of counteracting this—an “alkaline” substance, such as lime water or bicarbonate of soda—should always be added to cow's-milk feeds.

It is also important to note that a cow's-milk feed remains for a considerable time longer in the baby's stomach before it passes on into the bowel than a breast-milk feed does. This is because the stomach has so much more work to do in the first digestion of it, and it emphasises the necessity for leaving a suitable interval between feeds. There is also more curd to be digested secondarily by the bowel in the case of cow's milk, hence a greater tax on the digestive powers of the bowel, and this lays stress upon *one* great necessity for stopping milk feeds temporarily if it is disordered, and thus giving it rest.

Essentials in the Use of Cow's Milk for Infant Feeding.—From all these facts the mother will see that when we feed a baby on cow's milk :—

1. We must dilute it to make the flesh-forming ingredients less, and similar in quantity to those in breast milk.

2. Must treat the milk in some way so as to prevent the hard curd forming in the stomach.

3. Must add fat to the feed, or give it to the child separately, since by diluting the milk we have reduced it below what it should be in the baby's natural food.

4. Must add sugar, since there is more of this in any case in human milk, and even that which is present we have lessened by diluting the milk.

5. Must ensure that the milk is produced as cleanly as possible, and that all possible precautions are taken to keep it free from the entrance of germs, or growth of any already in it, until it is used.

6. Must give it as soon as possible after it is milked, and before it develops much acidity; and in hot weather especially must add an alkaline substance to the feeds to counteract this acidity.

7. Must, if possible, give it fresh, and not in any preserved form, as it exists in condensed milk, dried milk, and patent foods.

Dilutents.—In selecting a diluent we try to use something which softens the hard curd at the same time as it dilutes the flesh-forming ingredients. We can use to dilute cow's milk either whey or lime water, or plain water or barley water. The most truly "humanised" milk is prepared by using whey as a diluent, with definite quantities of skimmed or separated milk, and of cream of a certain thickness; but this, though it forms a much more suitable food for infants, unfortunately involves too much trouble in its preparation for it to be practicable for everyday use, except in the case of very delicate babies. I would strongly advise mothers to avoid using any patent "humanised milks" in fluid or concentrated form without medical investigation and sanction.

Lime water serves to dilute the flesh-forming ingredients, and has an effect in counteracting the tendency to sourness in the milk, and also an effect in preventing the formation of a hard curd, but used in quantity it is constipating.

Water only fulfils the first condition of dilution.

Thin, well-cooked barley water is the best diluent, since it not only dilutes, but also softens the curd. Oatmeal water is sometimes useful for constipated babies. Barley and oatmeal water are fluids containing traces of *starch*, and starch does not exist in breast milk, hence we are introducing a new element into the baby's diet, but if we use it correctly the baby benefits by the addition. It is advisable to add a small quantity of lime water to each feed as well, since this further helps to prevent the formation of a hard curd, and counteracts the tendency to sourness.

If one imitates the digestion of cow's milk in the baby's stomach, experimentally, by adding rennet to diluted milk in glasses, so that the formation of the curd can be watched, one obtains the following results :—

1. When scalded cow's milk and water, half and half, are curdled with rennet, a dense mass of large cheesy curds is formed.

2. When scalded cow's milk and thin barley water, half and half, are curdled with rennet, a considerable mass of curds is formed, but the curds are finer and lighter.

3. When scalded cow's milk and thin barley water, half and half, with lime water added (in the proportion of one part of lime water to twenty parts of mixture), are curdled with rennet, light, fine curds are formed through the mixture, which have little or no tendency to form a dense mass.

Hence I advise mothers to scald the milk, to use thin barley water as diluent, and to add lime water to each feed.

Use of Citrate of Soda.—The addition of citrate of soda to each cow's-milk feed, as suggested by Sir A. Wright and Dr. Poynton, has the effect of softening the curd, and this often considerably aids the child's digestion of cow's milk. In cases of difficulty with this the doctor will often order it, and as the powder does not keep well, the mother will obtain it dissolved in water from the chemist, and should add the dose ordered to each feed, and omit lime water in such cases. Milk may often in this way be rendered digestible for older children during illnesses, such as pneumonia, typhoid fever, &c., when it is very important to help a weakened stomach to do its work.

Use of Bicarbonate of Soda.—Bicarbonate of soda, which the mother will find it most convenient to use as a solution (see p. 235), when added to each cow's-milk feed counteracts the acidity in the

milk and in the baby's stomach, and prevents the formation of a hard curd; and,—as in the case of citrate of soda,—if used strong, probably prevents the formation of any curd at all. But while this is very useful in cases of *illness* with vomiting and indigestion, it is too unnatural a process to advise for healthy babies, and would tend to weaken the stomach's own powers of digestion.

The Heating of Milk.—In regard to the question often asked whether milk should be heated for infants or not, I would say that those mothers who keep their own cows, if these have passed the tuberculin test and are regularly examined, and if the child digests the milk easily, should not, except in very hot weather, heat the milk. Under such conditions the suitable feeding of the cows and the absolutely clean milking conditions can be ensured, and the milk will therefore be pure and suitable, and probably more digestible than much bought milk. It will be kept cool and dust-free till used, and will be used within the first twelve hours of milking, so that it will be fresh.

Those mothers who buy their milk in England or the Colonies should at all times of the year, in my opinion, heat their milk. The disadvantages of heating milk are small in comparison with the great advantages of heating it, since, though it *may* chance to harbour such dangerous germ poisons as are not influenced by sterilisation, we know that for the greater part germs are destroyed by efficiently heating milk. The child who takes raw milk is always liable to the risks of contamination of the milk where it passes through several hands, and is produced outside the immediate control of those interested in it, and it is therefore exposed especially to the dangers of consumption and infective diarrhœa.

Children who have much difficulty with the curd can digest cooked milk more easily than raw, and they are less upset by alterations in the milk due to any unsuitable food the cow may have had. Disease germs are to a great extent destroyed, though to be absolutely certain that *all* these are killed it would be necessary to boil the milk for twenty minutes on three successive days, and those more rare poisons generated by germs referred to above have been known to withstand even such sterilisation. But these facts emphasise the great importance of obtaining pure milk in the first instance, and since the seeds (or *spores*) of such germs as may have escaped destruction in the heating of the milk will grow in it at a

tepid or warm temperature afterwards, the importance of keeping the milk *cool after it has been heated* is obvious.

Methods of Heating Milk.—The milk may be *sterilised* or *scalded* or *pasteurised*. Authorities are not agreed as to which is the best method, and there are things to be said for and against each.

Sterilisation.—The derivational meaning of the word sterilise is “to render barren,” and when we use the word scientifically we mean to make barren of germs, that is, that sterilised milk is milk which has been heated sufficiently long to destroy all germs. The shorter heating process (pasteurisation apart) which does not actually fulfil this condition I shall, for want of a better term, refer to as *scalding*.

For sterilisation the milk is heated up to boiling point, and boiled for periods varying with the time the milk is to be kept. It is in the ordinary way either boiled for forty minutes, or, commercially, it is boiled on three separate occasions for five minutes, being kept at a lower temperature for some hours in the intervals between the boilings so as to allow all spores to develop and then destroy these at the next boiling. In cases where it is sterilised at large dairies to keep specially for long journeys, such as to India, it is boiled for twenty minutes to half-an-hour on three successive days.

Sterilisation considerably alters the milk, and lessens its nutritive value. It destroys the fresh substances, and renders the baby liable to a slight risk of scurvy. It also tends to produce constipation. It kills most of the germs the milk may contain and their spores, and renders it practically safe in this respect.

Scalding.—The milk is heated up to boiling point and boiled for three to five minutes if in a saucepan; if in a bottle or vessel stood in a saucepan of hot water it should be boiled five to ten minutes.

This alters the milk, and may to some slight extent lessen its nutritive value, and since it destroys the fresh substances, it exposes the baby to a slight risk of scurvy and constipation, but much less than sterilisation. It kills the greater number of the germs but not their spores, and therefore, though it renders the milk much more safe than if unheated, it does not render it quite so safe as sterilisation.

Pasteurisation.—The milk is heated up to a lower temperature

than boiling point, that is, to 155° F., *maintained at this temperature* for half-an-hour, and then rapidly cooled.

If the temperature does not exceed 155° F. during heating, this may not alter the milk so as to lessen its nutritive value, and it is less likely to expose the baby to the risk of scurvy or tendency to constipation. It kills most of the germs but not their spores, and therefore, though if properly carried out it renders the milk more safe than if unheated, it does not render it so safe as sterilisation.

Application of Methods at Home.—*Sterilisation* and *Scalding* may both be considered together, since they only differ in the length of time the milk is heated. They may be effected in one of three ways: 1. By heating the milk directly in an ordinary saucepan. 2. By heating the milk in a double milk saucepan, or in a vessel standing in a saucepan of boiling water, in both cases preferably with the milk covered. 3. By heating the milk in plugged or sealed bottles which stand in a saucepan of boiling water. Of these three methods, the first is the least to be recommended, and the third is the best.

For the first method an ordinary saucepan would be used.

For the second method a double milk saucepan may be used, or an Aymard Steriliser, which is practically a tin double saucepan with a spout and a lid, and costs (two pint size) a few shillings. Or the milk may be heated in a jug, especially an enamel jug with a lid, stood in a saucepan of boiling water.

For the third method either special or improvised apparatus may be used. *For special apparatus* the Soxhlet Set (see p. 126) may be recommended, or an "Infant's Milk Steriliser."¹ This consists of six small bottles (four-ounce capacity) in a cruet-shaped metal stand, and it is supplied with a bottle brush and a packet of cotton wool. It is to be placed in an ordinary saucepan.

For improvised apparatus small soda-water bottles or medicine bottles may be used, and stood in a saucepan which is deep enough to allow of the greater part of the bottles being immersed in water.

If no cruet or holder is used for elevating the bottles, these must not touch the bottom of the saucepan. Hence a layer of

¹ Obtained for 2s. 6d. from Messrs. Browne & Sayer, 104 Upper Thames Street, London, E.C.

straw, such as that from wine bottle covers, or tow should be placed over the bottom of the saucepan, in either case about half an inch thick, or several thicknesses of paper or an old folded cloth may be used. The bottles of milk should be stood in the saucepan after filling them well short of the neck and plugging them with cotton wool. *Cold* water should be poured into the saucepan up to the level of the milk in the bottles, taking care not to wet the wool stoppers. Note that no cover must be used to the saucepan when the bottles are plugged with cotton wool. After they have been heated, the bottles should be cooled first of all in a draught of air before being put on ice or into a refrigerator or into cold water in order to prevent cracking. They should not be unstoppered until the milk is required for the feed.

Home sterilisation is generally taken to mean boiling the milk for from fifteen to forty minutes; scalding, to mean boiling it for from one to five minutes. I should advise mothers to scald the milk at all ordinary times, that is, to boil it by the first method for about three minutes, by an egg timer, or by the second and third methods to cook it for ten minutes *after the water in the saucepan or lower part of the double saucepan begins to boil up well*. During very hot weather, or when first returning to milk after an attack of diarrhoea, or when summer diarrhoea is known to be prevalent, it should be boiled by the first method for ten minutes, or by the second and third methods for twenty minutes. I should strongly advise mothers to use the second or third methods, and the third method certainly whenever the milk is heated for the longer periods.

Pasteurisation.—This requires a special apparatus, such as the Hawksley's Pasteuriser, or the Freeman Pasteuriser. It requires very careful regulation of the temperature, *by means of a thermometer*, if accurate results are to be obtained; and it also requires very special care in the direction of immediate cooling of the milk after heating and maintenance of this below a certain temperature afterwards. Hence it is a method which is neither practical nor very safe for home use.

Ass's Milk.—This milk is sometimes ordered for delicate babies, for whom the curd of cow's milk is undesirable, and is very useful and digestible, since its flesh-forming ingredients are similar in nature and quantity to those of human milk. It is

procurable from Welford's Dairy Company, Elgin Avenue, London, and is expensive.

It should always be given raw, and since it contains *a very small amount of fat*, additional fat has to be given with it. Its sugar being almost similar in quantity to that in human milk, only a little of this requires to be added.

Goat's Milk.—Goats are often kept in Africa and in India, and under such circumstances their milk is sometimes a convenient substitute for cow's milk. The flesh-forming ingredients, fat, and sugar, are similar to those in cow's milk, hence the milk requires the same dilution, and also the addition of sugar and fat. It has a strong flavour, which is considerably removed by boiling, and careful grooming and housing, and hence it is advisable to boil the milk.

Koumiss.—Koumiss, the fermented milk of the mare, which is rich in sugar, and kephir, fermented skimmed cow's milk, are sometimes ordered for infants, and are very useful in cases of vomiting, or chronic indigestion or wasting, or in the case of older children during such illnesses as typhoid fever, and for the weak digestion which is often present in consumption. Koumiss and kephir are obtainable in London from the Aylesbury Dairy Company, Bayswater, W., and they cost about one shilling a bottle.

Condensed Milk.—Condensed milk is on the market in the form of sweetened and unsweetened brands. It has been in its preparation subjected to heat, and is therefore a *preserved food*, containing no fresh substances. The sweetened milk (full cream brands) may be looked upon as a strong ordinary cow's milk thickened into a syrup with cane sugar; the unsweetened milk as, if the best brand is used, a strong, fairly rich cow's milk. Hence both require dilution, according to a table, for the baby's use as well as suitable additions.

Sweetened Condensed Milk.—The first essential to be realised in regard to this milk is, that the "*skimmed*" brands contain no fat, and that the "full cream" brands, of which Nestlé's should always be selected for the baby's use, contain only a very small amount of fat, and much below what the baby should have when the milk is diluted for feeding. This milk furthermore contains a large excess of sugar (cane sugar, not milk sugar), added for preserving purposes; and such an excess of sugar exists in the feeds when the milk is diluted for use. The milk is thick owing to the fact that water is driven off

in its preparation, and sticky because of the added sugar. Therefore it cannot be accurately measured in spoons, and *must be measured in a "medicine-glass"* (see Fig. 29), as described on p. 184, when used for infant feeding. If this is not done, one "teaspoonful" of condensed milk will be in reality anything from $1\frac{1}{2}$ to 4 teaspoonfuls. If, on the other hand, too little condensed milk is used in the feeds, the baby gets far too little flesh-forming ingredient.

From all these facts the mother will see that, when sweetened condensed milk is used for the baby, without any additions and without careful measurement, the feeds contain far too little fat, and far too much sugar; and that if the milk is not used with a special knowledge of the dilution necessary to make its flesh-forming ingredient suitable to the baby's needs, a deficiency of this most essential element is given. And further, that even when the flesh-forming ingredient exists in almost the correct proportion, and fat is added to the feed, it is still an unsuitable permanent food for the baby, owing to the fact that there is too much sugar in it, and that it is preserved and not fresh.

If it is used properly, however, it is often very useful *temporarily* under various circumstances, discussed in different sections of the book.

Unsweetened Condensed Milk.—The unsweetened milk is much to be preferred to the sweetened for infants, since it contains more fat, especially the Ideal brand, which should always be selected, and because it contains no excess of sugar. Its chief objection is that it is a preserved food, and that it does not keep well after the tin is opened, but this last disadvantage does not obtain when a baby who is not very young is being fed entirely on the milk, since more of it is given than of the sweetened milk, and thus it is soon finished. The sweetened milk will be more useful for occasional feeds, and during very hot weather when no ice is obtainable for keeping the tin cool. In all other cases I would advise the mother to use Ideal milk in preference to Nestlé's. It is important to note that the unsweetened milk, unless kept on ice, cannot be used with safety for a baby on the day after opening. Hence in the absence of ice a fresh tin should be opened every day, and this must always be ensured to be absolutely sweet when opened; and even if kept on ice, the milk should not be used after the second day. This milk is consider-

ably thinner than the sweetened milk, and if two holes are bored, one on each side of the cover of the tin opposite to each other, which method is familiar to those who are in the habit of using such milk, it can be poured out fresh for each feed. The milk, when diluted for feeds, requires the addition of a little fat and a little sugar to make these ingredients similar in quantity to those in breast milk.

Suitable mixtures of sweetened milk for temporary use are given on p. 184, and of unsweetened milk on p. 181.

Neither sweetened nor unsweetened condensed milk, however scientifically used, can ever form a suitable or safe food for infants for continuous use. Babies reared on it digest it well as a rule, and, especially in the case of the sweetened brands, appear to the unseeing eye to be thriving, since they usually grow fat and gain steadily in weight, but such fat and such increase in weight are very deceptive, and it were well that the mother could estimate them at their true worth and recognise what a modern authority on the feeding of infants calls "the patent food baby veiling under his outward serenity the germs of latent and inevitable trouble." The fat is soft and flabby, since it is built up on sugar and not on fat in the food, and the weight increase is produced by this and not by firm flesh and fat. The baby is pale, and lacks the pink colour in its cheeks and rosy lips which belong to every healthy baby brought up in a temperate climate on suitable nourishment and abundant fresh air. As it grows out of its babyhood it shows markedly the signs of rickets (see Chapter IX.), and it has little or no resistance when illness attacks it, and as the foundations are badly laid, its constitution is almost invariably weakened or ruined. The same authority quoted above states that he has never seen a baby who had been fed for more than six months on condensed milk who did not show signs of rickets, and this is the experience of physicians generally. Hence, though the risks may be to some extent minimised by using the milk properly so as to include the necessary amount of fat and as much as possible of the flesh-forming ingredient,¹ no mother

¹ It must be clearly understood that in the case of the sweetened milk, the flesh-forming ingredient is always below what the baby should have, since we cannot increase the milk without also increasing the large excess of sugar already present, and thus running the risk of excessive formation of unhealthy fat which weakens and heats the baby, or of wind and consequent colic.

with her eyes open, who can obtain suitable fresh milk and get the baby to digest it, will adopt condensed milk any more than any other preserved food for continuous feeding—that is to say, for more than, at most, three months.

Starch: *Source of Starch.*—Starch is contained in all plants, and in the case of the banana and of most vegetables, such as cabbage, carrots, potatoes, &c., this forms their chief solid ingredient.

Starchy food is obtained chiefly from the grains of oats, maize, wheat, barley, and rice, which are known as cereals; and from the roots of other plants, such as arrowroot and tapioca; and from the pith of another, such as sago. The substance popularly known as “starch,” and used for stiffening clothes, is prepared by a special process from several of these.

A richer starchy food is obtained from the cereals than from the other sources named, and this is because these grains are the *seeds* of the plant, and nourishment is abundantly stored up in the seed for the use of the “seed baby” or young plant to be. The nourishment includes small quantities of flesh-forming and fat ingredients, as well as a large amount of starch. Hence wheat flour, which is so prepared as to include these ingredients (of which Hovis flour and Graham flour are types, according to Dr. Robert Hutchison), is more nutritious than flour which excludes them; and therefore Hovis bread and toast and biscuits and Graham bread and Graham biscuits are specially to be recommended for children.

Nature of Starch.—If a pinch of starch, such as ordinary laundry starch, or ordinary flour, or patent barley or ground rice, is examined under the microscope it is seen to consist of a heap of minute separate grains (or *granules*), and looks like a “heap of fine sand.” Each minute grain or granule has a firm, tough coat, inside which the starch proper is contained. The human starch-digesting juice cannot digest this tough coat, so that boiling is required to soften and burst it, and only prolonged boiling will dissolve out the floury starch within it ready for the digestive juices to act upon it. Hence the mother will appreciate the necessity for the prolonged boiling of all starchy foods, however finely they may be ground, such as barley water and gruels, and even more such coarser foods, as meal porridge, farinaceous milk puddings, &c.; and also the necessity for thoroughly cooking all vegetables which consist so

largely of starch, in order to burst the grains and prepare them for the digestive juices.

The material which forms this resistant outer coat of the minute starch grain or granule also forms the tough outer covering of *the whole grain* itself of oat, barley, wheat, &c.; and it is seen as the brownish husk-like particles in oatmeal porridge, in whole meal bread and wheat and oatmeal biscuits, and as the covering of the tough seeds of fruits, such as tomatoes and gooseberries. It is never digested in more than a very slight degree, if at all, even by older digestions, but it is in strict moderation useful in such form in the case of healthy older children and adults for the prevention of constipation. This is because in passing through the bowel it slightly stimulates this and encourages its movements. It will be obvious that in the case of young children, whose bowels are more delicate, it can never be given, and for this reason it is not advisable to give meal porridge, especially oatmeal, at the earliest until the eighteenth month, nor porridges at any time in childhood which are prepared from the whole grains.

Starchy Foods.—The oat, maize, wheat, and barley cereals are prepared and supplied as grains, or meals, or flours; and rice, either in the ordinary form as grains, whole or flaked, or as ground rice, as a flour. These cereals vary in themselves to a certain extent in their nutritious value, oats being the most nutritious and rice the least. But the *flours* of *wheat* vary very much in this respect, according to the method used in their preparation.

These facts have a practical application in the selection of starchy food for a baby. It is in general preferable to use a finely ground preparation, because even if meals or grains are used (such as oatmeal, pearl barley, and cracked or crushed wheat) to prepare the food, and then strained off, they require much longer cooking to extract sufficient of the starch contained in them. This is time wasted, since if the flours are carefully selected the child gets as much nourishment as when the grains or meals are used, and in my opinion more. I have heard mothers and nurses state that pearl barley produced a more nutritious barley water than patent barley flour, but this flour is only the pearl barley ground up. Also the food when given to the baby, unless it is prepared from grains grown at home, is not really any fresher when prepared from the bought grains and meals than when prepared from flours which are

usually put up in tins, since oatmeal and wheat and maize preparations as used in England and in all but remote country districts are put up in tins, cardboard boxes, or bags. It is very essential to select fresh cereals which have not been kept too long in stock in all cases, since meals not infrequently contain worms. And it is far preferable to use cereal flours to prepare the baby's starchy food, rather than patent foods which have been already heated in their preparation, and often kept in stock for an indefinite time.

It has been said that the flours of wheat on the market vary in their nutritious value. In the case of white flour as prepared for ordinary white bread making, and in the case of *whole meal* flour for the same purpose (*N.B.* not *whole wheat* flour), almost all if not the whole of those specially nutritious elements previously mentioned have been removed. Hence "baked flour," which is so largely used in the country in England and in the Colonies as starchy food for infants, often from the first week, is not to be recommended as a food at any time, nor the patent foods which are prepared from such flour. In the case of such *whole wheat* flours as Imperial Granum,¹ Chapman's Entire Wheat Flour, and in the case of certain of the starchy patent foods for infants, more or less of these elements have been retained. And the same remark applies to Farina,¹ a fine wheat meal very much to be recommended for children after the first year; Marshall's Farola,² a similar preparation; and Florador;³ and to Hovis³ and Graham¹ bread and biscuits.

It is not advisable to use one cereal flour entirely for a baby, especially wheat, because variety is good for it, and because the nutritious balance is better maintained by giving oat, wheat, and barley alternately. A good Scotch *oat-flour*, such as Scott's Midlothian or Robinson's Patent Groats, being the most nutritious, should be given frequently, and Imperial Granum, or Chapman's Wheat Flour, and Robinson's Patent Barley should be used to vary these. The only maize flour I know of is maizena or corn-flour, which has, owing to refining, no more nutritious value than ordinary flour, and hence cannot be recommended.

I would strongly advise mothers to make these cereal flours, and

¹ Obtainable from Robert Jackson & Co., 171 Piccadilly, London.

² Obtainable from the Army and Navy Stores, and Whiteley's, London.

³ Obtainable from the Army and Navy Stores, London; from Whiteley's, London; and from Robert Jackson & Co., Piccadilly, London.

also any patent foods used, such as Frame food, or Neave's food, or Bananina, sufficiently thick *with water* to form a jelly on cooling, and to use the definite quantities of the jelly indicated, as of cereal jelly, in the tables of cow's-milk mixtures, and in the diets for the first part of the second year. If this is done, the starch can be thoroughly well cooked, and also the necessity for prolonged boiling of the milk in the case of the patent foods is avoided, and also definite and suitable quantities of the starchy food can be given.

The use of the various cereals as porridges is discussed on p. 199.

Digestion of Starch.—Starch has to be considerably changed from its original form by the digestive juices of the saliva and bowel which are specially concerned with it before it can be absorbed. Saliva scarcely exists in the baby until its fifth to sixth month, and there is only a very small degree of starch-digesting power in the bowel before this age.

The changes occurring in the digestion of starch can be produced to a great extent outside the body by adding malt extracts with certain degrees of heat to the starch, and the digestive process can be rendered much easier by prolonged cooking. From these facts the mother will see that no starch can be required by the baby until it has reached the latter half of its first year, and that it is only justifiable to use a very thin, thoroughly cooked starchy water, because it aids the digestion of the essential cow's milk. Also that if starch as a food is given to a baby under six months it must be *predigested* (which is done in the case of certain of the malted patent foods), since the baby's digestion cannot otherwise properly deal with it, and it will, if not predigested, not only fail to nourish it, but will act as a dangerous source of irritation. The mother will see also that starchy food, even in this form, being unnecessary, should never be given under six months unless there is a special indication for its use. In cases where a baby does not thrive on cow's milk, or is constipated, predigested starchy food in small quantity is sometimes useful. Both the natural and the artificial digestion of starch results in its conversion into a form of sugar; for this reason malted foods taste sweet. Hence if a baby is given an excess of predigested starch, while this will not produce irritation as starch, it will do so as sugar, and fermentation in the bowel, wind, and sore buttocks are common results of the continuous or excessive use of foods of this nature (or malted foods).

When starchy food which is not predigested is given to the baby in the latter half of the first year, it must only be given in small quantity and thoroughly well cooked, since the baby's digestion has yet to be educated to deal with it, and if excess be given, or if it is given insufficiently cooked, it will fail to nourish the child, and the digestion will be upset.

Such prolonged cooking and avoidance of excess of starchy food is very necessary in the case of young children, but it is well to note that starch is much better digested by adults if it is equally well cooked, and much digestive disturbance is caused in their case by the use of excess of or insufficiently cooked starchy foods. Starchy food is always better digested if taken with flesh-forming food or fat. Hence cream should always be added, if possible, to the older baby's milk feeds containing starchy food, or other fat should be substituted. And children should be given cream or butter with their porridge, and plenty of butter, or an egg (which is rich in fat), at supper in addition to their farina, rice, or bread and milk ; or Plasmon will be very advisably added to such dishes. Farinaceous milk puddings, especially such as tapioca, sago, rice, and macaroni or vermicelli, which are not easy to digest, should not only be specially well cooked, but should be given only with the meat meal. If mothers all appreciated these facts, very many cases of chronic indigestion and malnutrition in children would be avoided ; and it is because the regulation of the starch in the diet is so important in childhood, and may be such an aid to nutrition or source of irritation, that I have entered into the subject so fully.

Patent Foods.—There are numerous patent foods for infants on the market, and every year we see additions to their number. A few of these are good and scientific foods, and to be recommended for special purposes ; of most the converse is true. Some are intended to be prepared with water, and some are intended to be used as additions to cow's milk. It is very important for the mother to know that all these foods fall into four classes :¹—

1. Those which consist of condensed milks, dried milk, or other *flesh-forming ingredients*, which are therefore allowable for young babies.

¹ My classification is based on the analyses of these foods given by Dr. Robert Hutchison in his "Lectures on the Diseases of Children," with his kind permission.

2. Those which consist of dried milk or other flesh-forming ingredients, with also some *completely predigested starch* added, or which consist only of *completely predigested starch*, all of which foods are therefore allowable for babies under six months of age.

3. Those which have the same composition as the last-named foods, but the starch is, when given to the baby, almost but not entirely predigested. These do not theoretically form suitable foods for babies under six months, though Benger's food and Theinhardt's Infantina have, in my experience, proved useful for babies in special circumstances during the latter part of this period.

4. Those which contain a large quantity of, or which consist entirely of, *crude unchanged starch which is not predigested*, and which are therefore not suitable under any circumstances for a baby under six months of age, and which should in practice never be given before the eighth month.

To the first class belong—

Condensed milks.

Glaxo.¹

Allenbury's food, No. 1.

To the second class belong—

Allenbury's food, No. 2.

Horlick's malted milk.

Hovis food, No. 1.

Mellin's food.

To the third class belong—

Benger's food.

Savory and Moore's food.

Infantina.²

To the fourth class belong—

Nestlé's food.

Ridge's food.

Neave's food.

Carnrick's soluble food.

Hovis food, No. 2 (Hovis

Bread Flour Co., Ltd.

Macclesfield).

Frame food.

Allenbury's food, No. 3.

Milo food (Nestlé's).

Bananina (Banana Bread

Flour Food, Ltd., Liverpool).

Robinson's Patent Barley.

Robinson's Patent Groats.

Chapman's Entire Wheat Flour.

Imperial Granum (a whole wheat flour).

Robb's Nursery Biscuits.

None of the above foods, which are intended to be made with water and to replace fresh milk, are permissible for continuous use.

¹ Glaxo Company, 88 Gracechurch Street, London, E.C.

² Obtainable from Theinhardt's Food Company, 6 Catherine Court, Seething Lane, London, E.C.

They are all preserved foods, and when we compare them to breast milk we find, what it is very important to note, that they are all, except Glaxo, *deficient in fat*. In some of them the flesh-forming ingredients are not present in the necessary amount for the baby's nutrition, and most of the malted foods contain a large excess of sugar in the form of predigested starch.

It is the persistent and solitary use of patent foods, and the use of them even temporarily without the knowledge of how to select the right ones and how to supplement their deficiencies and counteract their dangers, that is to be condemned. Used temporarily with this knowledge during travelling, illness, periods of digestive difficulty or of unsuitable milk supply, some of them are often of great value.

Temporary Uses of Patent Foods.—Those foods which are intended to be prepared with water, such as Glaxo, the condensed milks, Horlick's malted milk, the Allenbury foods Nos. 1 and 2, Carnrick's soluble food, and Milo food, will, according to the child's age, be useful for early morning feeds when the morning's milk has not arrived, and during travelling. For the latter purpose I would strongly advise mothers to use Glaxo, or, failing this, Ideal unsweetened condensed milk. If the child is over eight months old it will be advisable to take a quickly prepared food, such as Frame food, or Neave's food, or Bananina, and to add a jelly prepared from one of these (see p. 119) over a spirit-lamp to the Glaxo or condensed milk feeds to supply the necessary starchy food.

If Nestlé's milk or a patent food other than Glaxo is used, it will be very advisable to take a supply of good tinned sterilised cream (see *Cream, Tinned*) to supply the necessary fat. Such cream must be ensured to be fresh when opened, and the reserve tins should be kept in the ship's "cool room," and the tin in use should be kept cool with the special precautions given on p. 135. A little fresh fruit juice, which is easily prepared on board, should be given daily during feeding with any of these preserved foods.

Those foods consisting of or containing predigested starch, such as Mellin's food, Hovis No. 1, and Horlick's malted milk, will sometimes be useful when a laxative effect is required (see *Constipation in Infancy*), and should always when added to milk replace the same amount of sugar. Mellin's and Hovis No. 1 and No. 2, Theinhardt's Infantina, Savory and Moore's food, and Allenbury's

malted food will sometimes be useful, according to the child's age, as temporary additions to the milk feeds to improve the baby's appetite and afford change during periods of digestive delicacy or convalescence from illness. The use of Benger's food under special circumstances and during weaning is discussed on pp. 178 and 179.

During very hot weather, and especially when summer diarrhoea is prevalent, in households where ice is not obtainable and when the milk is obtained from a distant source, Glaxo, or failing this Nestlé's condensed milk, will often be safer to use than cow's milk.

Such malted foods as Theinhardt's Infantina, which is a nutritious and scientific preparation, or Hovis food No. 2, will be useful after the eighth month to vary the starchy food which is not predigested, which must be given now in the form of cereal jellies.

Robinson's Patent Barley and Robinson's Patent Groats, Imperial Granum, and Chapman's Entire Wheat Flour will be useful for the preparation of cereal jellies (see *Recipes*) about the eighth month. To vary these, and when starchy foods which can be more quickly prepared are required, as during travelling, Bananina or Frame food may be useful. A sufficient quantity of these foods should be taken,—considerably more than that stated in the directions on the tin,—to make a *water* gruel thick enough to set into a jelly, or thick paste, on cooling. Each of these foods should be boiled for *ten minutes*, and the jelly then added to the feeds in the quantities indicated in the tables of cow's-milk mixtures and suggested diets for the first half of the second year. Bananina is a refined preparation of banana flour, and is easily digestible. It is a valuable preparation of starch on account of the salts contained in it, but is not, it would seem, so nutritious as wheat flour, and still less as oat flour, which stands at the head of the list.

In buying patent foods, only new tins which have not been long kept in stock should be selected. They are not infrequently found to be stale and rancid, especially in the Colonies. The small amount of fat added to certain of the foods very easily becomes rancid, since fat has to be treated by a very special process if it is to keep sweet in a dry, preserved food.

The baby who is reared solely on a patent food incurs a constant risk of scurvy, a danger which is greater than that which threatens the baby fed on sterilised milk; and even the fresh milk mixed with some of them does not, in the opinion of a modern

authority of wide experience in children's diseases, safeguard the child from this disease. If this is so, it is probably, one would think, because many of these foods are directed to be *boiled with the milk*, and this is another good reason for preparing such foods always with water, and adding them as jellies to the milk, which need not then, if pure, be boiled, or only for a limited time.

The child also is liable to rickets and all that this term covers, which is, briefly, a feeble constitution and a low resistance to illness generally, an imperfect physical development and an unstable nervous system, and the loss of much of a child's natural happiness.¹

The patent foods and condensed milks meet a need created by an unregulated milk supply and a popular ignorance of how to use fresh cow's milk and of its advantages, and they flourish on these; but if their manufacturers could be persuaded, or forced, to name them "Patent Invalid or Temporary Foods for Infants," this would give them their proper place among our various aids to the rearing of children. Their titles as qualified at present by such incorrect and misleading explanations as "Perfect Substitutes for Mother's Milk" or "Ideal Foods for Infants," and their widely circulated descriptive pamphlets and portraits of fat babies, are responsible for a vast amount of childish ill-health and misery, for the rearing of children with weakened constitutions, and in not a few cases for their premature deaths.

The persistent use of wrongly selected and imperfectly supplemented patent foods, and their bad results, are not confined to the lower classes of society, though here their worst consequences are seen. A large number of unfortunate babies of the working classes are reared on skimmed condensed milk, which is specially attractive to their mothers on account of its greater cheapness and easy preparation; and when one reads in the directions supplied with one well-known patent food (which consists entirely of unchanged starch in the form of flour) that delicate babies may be reared on the food (?) if made with water, one feels that there is a very urgent need for the establishment of practical "Schools for Mothers" of the working classes, no less than for pure and cheap milk depôts

¹ These are the results in earlier childhood, but in later life—of special interest to women—difficult confinements are not uncommon sequels; and many cases of consumption, nervous and mental disease, spinal deformities and adenoids are being laid to the charge of malnutrition in infancy.

under municipal or private control, in every populated centre in England and the Colonies.

Pale-faced, peaky babies, with too wistful eyes, or fat, lethargic babies, flabby and weak and irritable; and sickly-looking toddling children, whose foreheads are large and prominent, and temples often marbled with blue veins, whose faces and limbs lack their natural chubbiness and legs are often crooked, and who are easily tired and constantly fretful,—all bearing the stamp of improper feeding,—are all too common in our streets. They are also so distressingly common in the out-patient departments and wards of our children's hospitals, and in the experience of the general practitioner, as to appeal to any mother's heart if they caught her seeing eye, and to make her resolve to compass the enlightenment of all mothers of all classes on this subject, and the *prevention by law* of the indiscriminate sale of such foods under their misleading titles. There is perhaps a great temptation for mothers to use these foods where, as in some of the Colonies, pure and digestible milk is difficult to obtain, but to insist on a satisfactory milk supply is the better way to overcome the difficulty, and the only one which can ensure the rearing of a sound and healthy generation of children in England and our Colonies.

The question of feeding in childhood is one of great importance to mothers, for if "the first right of a child is to be well-born," its second "right" is *a perfect nutrition in infancy*, since this is the first great essential in the building up of a sound mind in a sound body.

CHAPTER VII

BOTTLE FEEDING

“The grievous question rose eternally
How oft one ought to dine diurnally,
Which pabulum would soothe internally,
Or which cause colic most infernally.”

—E. V. COOKE, *Chronicles of the Little Tot*.

Ordinary Bottle-Feeding Apparatus.

Two bottles and teats.

Two bottle-brushes.

One new wooden nail-brush.

One pound of bicarbonate of soda *or* of boracic acid powder.

A bottle of lime water (for cow's-milk feeding).

A small kettle.

A double milk saucepan.

A spirit lamp *or* a paraffin stove *or* a gas-ring.

A flannel cosy for the feeding-bottle (useful, but not essential).

A good-sized basin *or* a patent food-warmer.

A large enamel bowl for soaking the bottles.

A glass funnel (from the chemist) *or* a china funnel (from the china shop) *or* white enamelled funnel for filling the feeding-bottles (very useful, but not essential).

Apparatus for measuring and making up feeds.

A teaspoon, a tablespoon, a teacup, a breakfast-cup, and a large jug,

or

A “medicine glass” (see Fig. 16) to measure drops, teaspoons and tablespoons up to two ounces.

A graduated quart jug (see Figs. 17 and 20).

An eight or ten ounce graduated glass with a lip (see Fig. 18).

Two bottles at least are necessary, and these should have *wide* necks, with the teats, which should be short and broad, directly attached to them, without the intervention of a long tube, or even a

screw. Bottles with long tubes, the sale of which is prohibited in France and in certain States of America, are very dangerous, since the tube cannot be properly cleaned, and inevitably harbours sour

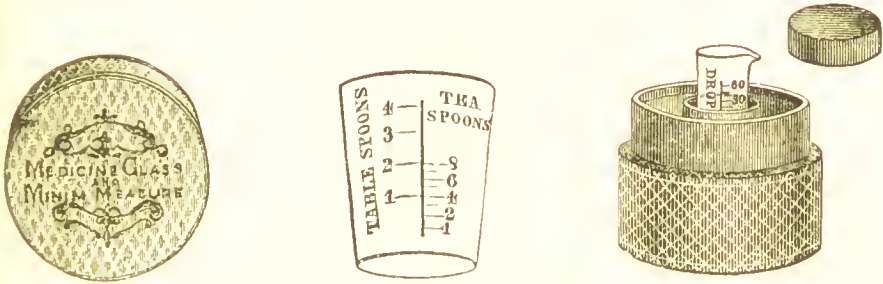


FIG. 16.—Medicine glass and drop measure—measuring drops up to one teaspoonful, and teaspoons and tablespoons up to four tablespoonfuls (two ounces).

milk and germs. It was with no little surprise that I received the information recently from a London firm of instrument-makers of standing, that they were obliged to stock such bottles since customers still demanded them.

Some bottles are made with a second opening, which is closed during feeding, according to the make of bottle, by a rubber cap, or cork, or valve, or by a screw. Other bottles are made without such an opening. Most authorities are agreed that the child sucks in a more natural way and more slowly when the bottle has no second opening; others consider that the opening, by allowing of flushing through with water, ensures more thorough cleansing. If an opening exists, it should essentially be at the extreme lower end of the bottle, for it is essential, in addition to the wide neck and direct attachment of the teat, that the bottle should be simple in shape, and such that it can easily be cleaned throughout with a bottle-brush. The Amater, the Soxhlet, and the Walker-Gordon bottles are good types of bottles without openings, and the latter have the advantage of being very cheap.



FIG. 17.—Graduated quart jug (enamel).

Maw's "Century" feeding-bottle, the 'Army and Navy "Hygienic" feeder, and the "Allenbury" feeder are all satisfactory types of bottles with lower openings.

In the Amater¹ feeding-bottle, invented by Dr. W. J. Henson, shown in Fig. 19, we have, I believe, the best bottle as yet invented, and the one which most simulates the human breast. The bottle consists of two parts only. It is entirely globular, and the glass body is graduated up to eight ounces. The neck is not narrow and only very slightly sloped, and is covered by a detachable wide rubber

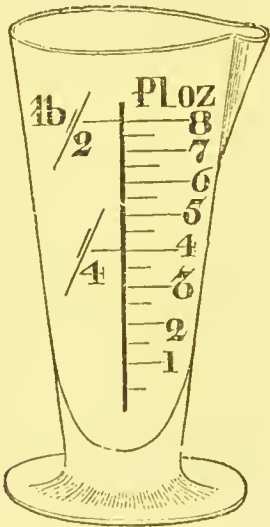


FIG. 18.—Graduated eight-ounce measuring glass with lip.

cap, out of the centre of which protrudes the teat. The child's face presses against the soft rubber cap, and it uses more natural suction in obtaining the milk. It is not possible for it to suck any air, since the only opening in the bottle when the teat is slipped on is a minute one high up on the side of the bottle on which the graduations are, which side must therefore be held uppermost during feeding. The bottle is particularly easy to clean, and requires no bottle-brush, since it is so short and the neck so wide that the fingers and a rag can do all that is necessary, and the teat is easily turned inside out and cleaned.

A double milk saucepan is an essential in preparing barley water and other starchy foods for infants and young children, and saves very much trouble, since during prolonged cooking things cannot burn. It will also be necessary for heating milk where this is done, unless bottles or special apparatus are used for the purpose. It should be kept, like the milk jug (which should have a *wide neck*), bowls, bottle-brushes, cloths, &c., especially for the child's use, and should never be used when the enamel is inclined to chip off.

The spirit lamp, paraffin stove or gas ring, and small, quickly boiling kettle are necessary, since babies will always require a feed

¹ Obtained from Messrs. Lowe & Co., 8 Stafford Street, Old Bond Street, London.

early in the morning, and, during the first three months at least, one feed during the night.

A bag of double flannel large enough to cover the body of the bottle will act as a convenient cosy to keep the feed warm during feeding, especially in the case of very young or not very vigorous babies.

Domestic measures (*table* teaspoons, and tablespoons, and cups) can be used for measuring the food ingredients, and a large jug for mixing them when preparing all mixtures. These are not exact, however, and it saves a great deal of time and trouble, in cow's-milk feeding especially, to use certain special and very inexpensive apparatus. Hence if the food is to be prepared as required for the baby, that is, as single feeds, a "medicine glass" should be used for

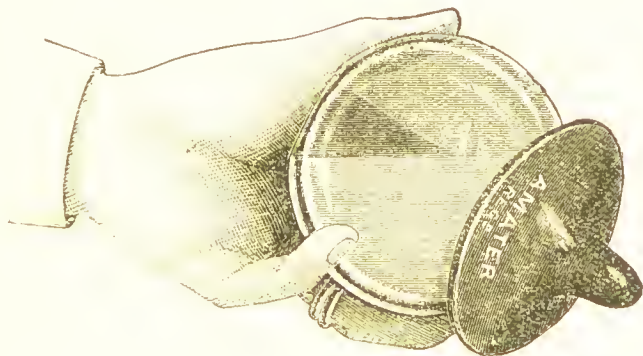


FIG. 19.—Amater feeding-bottle.

measuring the food ingredients (a teaspoon for sugar), and a graduated eight or ten ounce glass with a lip for mixing them in and making the feed up to the required quantity. If the food is to be prepared in bulk once or twice a day, the graduated eight or ten ounce glass mentioned should be used for measuring the food ingredients, and a graduated quart jug for mixing them in and making the mixture up to the required quantity.

Special Apparatus.—It is a great convenience in cow's-milk feeding to have a special inclusive set of apparatus, since by means of this all the food for the day may be mixed on two separate occasions on the arrival of the milk, heated in the feeding-bottles at the same time, and put away sealed up and free from contamination in these ready to be warmed up for use.

The set designed by Professor Soxhlet, known as the "Soxhlet

Set" (see Fig. 20), is a good one. This, bought as a complete set with all the extras from any large instrument and appliance makers,

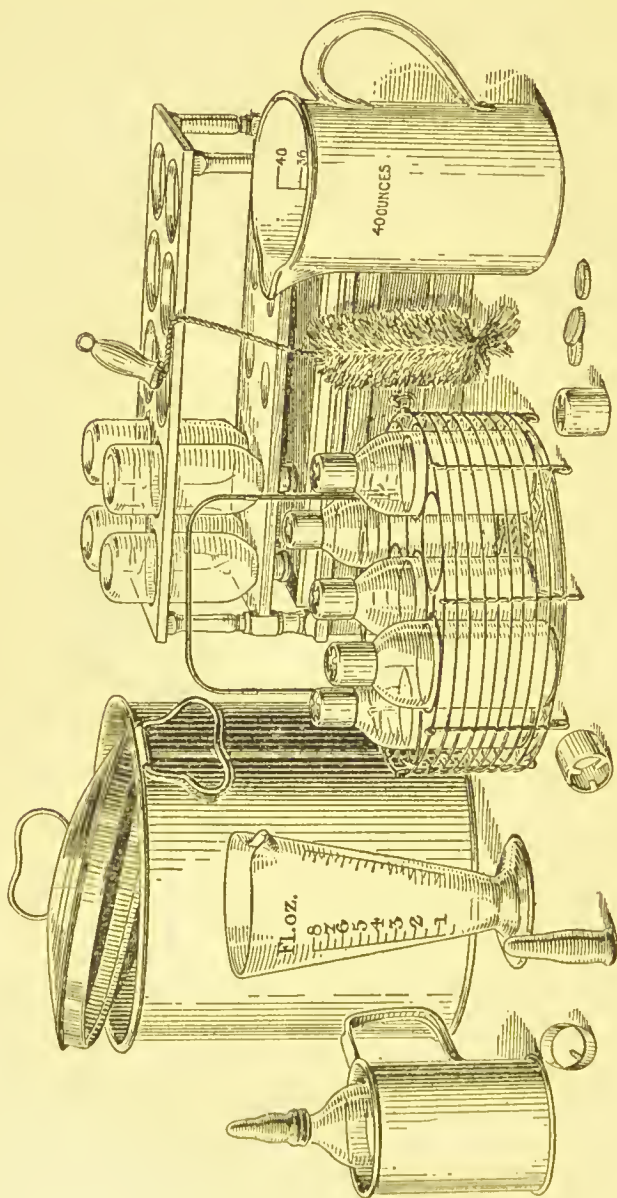


FIG. 20.—Soxhlet Steriliser Set—glass jug with foreign measures replaced by enamel quart jug graduated in English measures; and graduated lipped measuring glass added.

costs, according to finish, from 20s. to 30s., and includes the following:—

Twenty feeding-bottles, with fittings.

Three teats.

A wooden rack to hold bottles when empty.

A graduated glass jug.

A large metal saucepan with a cover, for heating the bottles of milk in.

A tin holder, *or* a wire basket, for holding the bottles of milk when in the saucepan.

A mug-shaped tin for warming feeds.

A bottle-brush.

The feeding-bottles are supplied with indiarubber discs and metal sockets for covering them during heating and waiting for use. These bottles, of which the glass is especially strong, are made in three sizes, "small," "medium," and "large"; and these are equal approximately to five ounces, seven ounces, and nine ounces. The set usually contains only the small size. Hence either assorted sizes must be chosen at the beginning, or as the child comes to require the larger sizes these must be bought additionally, especially as the bottles must not be filled quite full and well short of the neck. They are not graduated.

The graduated glass jug has the disadvantage for English mothers of being graduated according to continental measures, but could be replaced by a graduated quart jug as recommended under ordinary bottle-feeding apparatus.

An eight or ten ounce graduated glass with a lip, recommended under the same heading, will also be useful additionally for measuring out the food ingredients in making up the mixtures. Failing this, domestic measures must be used.

The bottles of milk should be covered with the rubber discs and metal sockets, and placed in their holder into the large block-tin saucepan. The saucepan should be placed on the fire, gas, or paraffin flame. Cold water should be poured in up to the level of the milk in the bottles. If the milk is boiled for more than five or ten minutes it will be less nutritious for the child (see Chapter VI.).

The bottles of milk, after heating, should be allowed to cool down in a draught of air, after which they should be placed in a refrigerator, or stood in a basin of water with ice added if possible, the bottles collectively being draped round with butter muslin, the lower part of which dips into the water continuously. Milk requires

the same care after heating as before, and cooling down as rapidly as possible.

Before feeding, the bottle of milk is to be placed in the tin mug in hot water to warm it, the rubber disc being now replaced by the teat.

A smaller Soxhlet Set can be obtained at a lesser cost containing the essentials, namely, ten bottles and their fittings, the large metal saucepan, and the holder for the bottles during heating. All the separate items in the set can be bought separately at any time.

Cleansing of Bottles and Teats.—Bottles should be thoroughly cleansed *immediately after use* with hot water and the bottle-brush, well rinsed with clean water, and kept soaking in a bowl of clean water to which boracic acid has been added when boiling, in the proportion of one dessert-spoonful to the pint, or the same quantity of bicarbonate of soda added directly to the warm water. If it is considered necessary to boil the bottles occasionally, after being cleansed with hot water and soda, they should be put into a saucepan of *cold* water with the precautions indicated on p. 107. The water should be heated up gradually and the bottles boiled for a few minutes. In general, especially if an Amater bottle or bottles with a lower opening are used, boiling should not be necessary, if the bottles have been cleansed *immediately after use* and before the milk has been allowed to dry on them, which should never obtain, whatever bottles are used.

Teats, of which there should be one or two in reserve, and which should be *firm*, should be turned inside out immediately after use, and scrubbed with hot water and the nail-brush, and then left soaking with the bottles in the boracic or soda solution. Comforters if used, of which there should always be two, should be cleansed in the same way as the teats and kept soaking when not in use. It is advisable to boil the teats once a week, that is, they should be dropped into *boiling* water and *boiled* for two minutes. All utensils, brushes and cloths, should be kept scrupulously clean, and the milk jug scalded before use. The bottles and teats and comforters should be thoroughly rinsed with *boiled water* just before use.

Method of Feeding.—The food should be warmed by standing the feeding-bottle in a basin of hot water not hot enough to crack the bottle, or in a patent food-warmer, for a few minutes, until it is warmed to blood heat, or *just warm*, which should be ascertained

by turning the bottle upside down and allowing a few drops to fall on the back of the hand. Nurses should be cautioned against testing the temperature by drawing the teat, which is particularly dangerous for the child, or by merely feeling the outside of the bottle, which is unreliable. The teat should be affixed, and it is necessary to see before feeding the baby that the milk flows easily. The teat aperture is often too small, and the opening must then be enlarged with a large darning-needle, or an extra one may have to be bored with the same made red-hot; or, on the other hand, the aperture may be too large. On turning the bottle upside down, the milk should flow out *very slowly* in large drops, but not in a stream. The nurse should be cautioned, and watched to see that she does not place the bottle upside down and leave it in the cot or pram, and the baby thus be allowed to finish its feed much too quickly and to remain sucking wind from an empty bottle. The "feeder-holders" advertised by some firms also should never be used under any circumstances. The baby should be fed carefully on the lap, half lying and half sitting in the nurse's arms, and should take about twenty minutes over its feed; not allowed to go to sleep between, as a young baby may, which allows the milk to become too cold, nor to take it all too hastily. The bottle should be so tilted that the end of the teat is just under the milk, but not so much that the child gets it too fast. If it sucks greedily and gulps its food, the teat should be withdrawn at intervals, or a stiffer teat with a smaller opening should be selected. If sleepy, the baby, after being changed, should be laid down at once; if not, it may often be advantageously raised gently into a sitting position after a meal, in order to get rid of wind which it sometimes swallows with its feed. It should not, however, be jogged about or played with, and should then be laid down on its side, when it will often settle to sleep.

Quantity at a Feed.—The size of the feed to be given to a baby must lie within certain measured limits, which are estimated upon the capacity of the average baby's stomach at different ages, but the exact size of the feed must depend upon the requirements of the individual baby, and these the mother will ascertain correctly if she is guided by the rules given below. The limits which must be observed are given in the *Table of Feeding* on p. 133. The quantities for each feed in this table are not given more exactly

because babies vary in their appetites and digestive capacities, and therefore two figures are given representing a smaller and a larger quantity, intermediate quantities being understood. In general the mother will be wise to commence with the smaller quantity and increase gradually from this to the larger as the baby gets older, until the quantity for the next age is reached. The mother must have such a table to refer to, because seeing that a baby's stomach only gradually increases in size, if too large feeds are given, it becomes overstretched and weakened. She must note that in all the *tables of mixtures* given for the use of cow's milk and condensed milk, the total quantity of the feed given corresponds with the higher of the two figures in the *Table of Feeding*, and is *the maximum size of feed allowable for the age*, and it is left to her discretion to give the correct amount for the particular baby; that is to say, while she must never give a larger feed, she may often give less. But it is important to note that the feed must be made up to the quantity indicated, and any food the baby leaves thrown away, otherwise the right strength of mixture will not be given.

The amount of breast milk provided daily by average breasts after the first fortnight seems to increase rapidly during the first two months, though more slowly afterwards, so that many babies will need the maximum quantity during this period. Some babies thence onwards up to the ninth month will do better all along on smaller feeds, say six ounces, but others again will require seven or eight ounces.

The rules which must govern the exact size of feed for the individual baby are based upon the following points: The baby's digestion, as evidenced by its general condition and motions; its weekly increase in weight; its weight at birth; the rate at which it feeds; the strength of the feed, and the inclusion of all the essential food ingredients in it.

1. If the baby is satisfied and comfortable after a feed; if it does not return more than a mouthful or two of unchanged food without effort after its feed; and if it is gaining steadily in weight, *the quantity is sufficient*.

2. If the baby is fretful and restless, and cries when the bottle is removed, *but shows no signs of indigestion between feeds*, and is not gaining in weight as it should, *the quantity is not sufficient*. *Note*.—The baby may require a stronger mixture (more milk) or a richer

mixture (more fat), rather than a larger feed (see *Regulation of Strength of Cow's Milk*, and *Additional Fat, Use of*.)

3. If the baby returns a good deal of its feed immediately after it; or if it is sick and fretful between feeds, it is *probably having too much*, and in such case may be stationary or losing weight. *Note*.—Other causes may underlie this condition (see *Stomach-ache*, and *Colic*, and *Vomiting*.)

4. If the baby's weight at birth was less than the average seven to eight pounds, it *may* need a smaller-sized feed; if more, it may need more.

5. If the baby takes its feed slowly, it is more likely to be satisfied at the end, and a bolted feed will generally cause it to be dissatisfied after the bottle is removed, in addition to other troubles.

6. In general, the stronger the food the baby is taking, the less in quantity it will require at a feed; and conversely, if it is necessary to reduce the strength of the food on account of the baby's digestion, a somewhat larger feed will be required.

7. If the due amount of fat, as well as flesh-forming ingredient and sugar, is given in the feeds, the correct size of feed is more likely to satisfy the child. I have seen babies taking feeds which were very poor in one of these elements, especially fat, taking feeds which were far too large for their ages, who were continually fretful and dissatisfied, but who took smaller feeds contentedly when the mixtures included the necessary ingredients.

The mother must remember that the baby's stomach is an elastic bag, which has a considerable power of stretching; but that if this overstretching is a constant occurrence, the stomach walls lose their elasticity and become flabby and enfeebled, so that the digestive power is impaired.

Intervals between Feeds.—The necessity for observing due intervals between feeds depends upon the fact that when a feed has been swallowed it takes a definite time to be digested, during a considerable portion of which time it remains in the stomach. This statement applies to breast and bottle feeds; but it must be remembered very essentially in the case of the bottle baby, since cow's milk remains for a longer time in the stomach even than does breast milk. Therefore the baby *must be fed strictly by the clock*.

The suitable intervals for average healthy babies are given in the

Table of Feeding on p. 133, and these should be observed for both breast and bottle babies. The only circumstances under which they might be modified are the following:—

1. If a hungry, vigorous child who is taking a large breast feed, or a fairly strong milk mixture, shows signs of indigestion, such as vomiting or stomach-ache, it will often do better if the intervals between feeds are made longer.

2. If the child is small and weakly, and not taking the breast vigorously, or if the bottle baby is delicate and can only digest a weak mixture, it may require to be fed at rather shorter intervals.

3. Some babies will do better after the third month is complete if fed at three-hourly intervals instead of two-and-a-half-hourly until the eighth month.

At the eighth month, when starchy food is given, and when also the child is usually taking much stronger milk mixtures, the feeds are more satisfying, and longer intervals are sufficient. And towards the completion of the first year the child will sometimes do better with four-hourly intervals.

The child should be wakened, if necessary, during the day for its feeds, especially during the earlier weeks, so that it may form the habit of waking at that time, and it is very essential to do this from the very beginning. If the first feed in the day is given about 6 A.M., the correct number of feeds for the twenty-four hours will be got in most conveniently until the child is a few months old. After this the first morning feed will have to be given when the baby wakes, which, now that it is more active and vigorous, requiring less sleep during the day and sleeping all night, it may do a little earlier or a little later. Usually it will wake somewhere between 5.30 and 7 A.M., and the subsequent feeds should then be given at the correct intervals, and will be got in before 11.30 P.M. The child after being once put to bed for the night should never be *wakened* for a late feed, even though such is included in the *Table of Feeding*.

Suggested hours for feeding are given in the Table of Feeding as a guide to the mother, but they will necessarily be modified according to the time the child wakes in the morning, and according to whether it sleeps all night from bedtime onwards, or wakes and requires a feed the last thing; and also according to domestic arrangements.

TABLE OF FEEDING

Age.	Number of Bottles at a Feed.	Quantity Interval.		Quantity for 24 Hours.	Night Feeds.	Suggested Hours.		
		Ounces.	Hours.			A.M.	P.M.	A.M.
3rd day to 10th day	10	1-1½	2	10-15	1	6, 8, 10, 12	2, 4, 6, 8, 10	2
10th day to 28th day	10	1½-2½	2	15-25	1	6, 8, 10, 12	2, 4, 6, 8, 10	2
1st month to 2nd month	9	2½-3½	2½	22½-31½	1	6, 8.30, 11	1.30, 4, 6.30, 9, 11.30	2.30
2nd month to 3rd month	8	3½-4	2½	28-32	1	6, 8.30, 11	1.30, 4, 6.30, 9, 11.30	2.30
3rd month to 5th month	8	4-5	2½	32-40	0	6, 8.30, 11	1.30, 4, 6.30, 9, 11.30	...
5th month to 7th month	7	5-7	3	35-49	0	5.30, 8.30, 11.30	2.30, 5.30, 8.30, 11.30	...
7th month to 8th month	7	6-7	3	42-49	0	5.30, 8.30, 11.30	2.30, 5.30, 8.30, 11.30	...
8th month to 9th month	6	7-8	3½	42-48	0	5.30, 9	12.30, 4, 7.30, 11	...
9th month to 12th month	6	8-9	3½-4	48-54	0	5.30, 9	12.30, 4, 7.30, 11	...
						5.30, 9.30	or 1.30, 5.30, 9.30	...

Night Feeding.—The baby should be wakened during the day for its feeds, if it needs this reminder, but never at night, when it should only be fed once or twice at most, *if it wakes and cries*. This it will probably do during the first month. After this age only one feed should be given in the middle of the night, and if the baby wakes and cries after this, refusing to settle, a feed of sweetened water or barley water only should be given to soothe it. If after careful trial this will not satisfy the child, a very weak feed should be given, and this should be gradually reduced to a feed of water merely flavoured with the food. The child may thus be broken of the night feed, and should sleep after the third month without waking, between 11 P.M. and 6 A.M. The stomach works much better for the rest, the child is more hungry during the day, and its digestion can better deal with the stronger and larger feeds which it needs now; and not a little trouble is saved. The pernicious habit of keeping feeds warm during the night must be very strongly condemned. If the child has a night feed it must be freshly prepared; but it will be to its own advantage, and that of its mother or nurse, if night feeds are stopped as soon as possible.

Use of Cow's Milk.—It is important to note that all milk used for a young child *must be obtained twice a day in sealed bottles*, representing two separate milkings. This cannot be too strongly insisted on. Dairy farmers, and milk dealers who cannot comply with these essential requirements, should never supply milk for a child's use. If each mother, before beginning cow's-milk feeding, would make a point of investigating the conditions governing the production and management of the milk (see Chapter VI.), they would create before long a demand for a pure and suitable milk in all places where this is not already obtainable, for which the supply would soon be forthcoming.

When the milk does not arrive early enough for the first very early morning feed, a feed of Glaxo or of condensed milk, or of one of those foods permissible for use under these circumstances (see p. 118), should be substituted, as the child should never have milk which has been kept overnight.

The milk should always be tasted on arrival to ensure that it is not sour. If it cannot possibly be obtained in sealed bottles, and arrives instead in a can, it must be strained through a single layer of

nainsook as soon as possible; and this would be an additional safeguard in all cases.

Top Milk.—In quite cold weather it is advisable to stand the milk for five hours with the same precautions for keeping it cool and dust-free as after heating (see below), and then to use the upper half only, into which a good deal of the cream has risen, to prepare the baby's food. This necessitates ordering a double supply of milk, but the lower portion can be used for cooking purposes. The milk (the quantity being known) should be stood in a narrow jug (covered), and the upper half or top milk later poured steadily into a graduated jug until it reaches the mark in the graduated jug which represents the half of the original quantity of milk. Or the milk may be stood in a wide basin (covered) and the top milk skimmed off with a large spoon into the graduated jug until the correct mark is reached.

Heating the Milk.—Both in the Colonies and in England, as a general rule, I think, the milk where this is bought should, in absence of a more ideal milk supply, be scalded all the year round (see *Scalding of Milk*). If top milk is not being used, the milk should be heated immediately after arrival; if it is, the top milk should be scalded as soon as separated.

Care of the Milk after Heating.—If the feeds are to be prepared for the baby as required, the milk should be poured into a thoroughly clean, scalded jug. The jug, covered by a piece of nainsook (not muslin) should be placed, if by any means possible, in a refrigerator; if not, it must be stood in a deep basin of cold water, if possible containing ice; failing this, salt will be very advisably added, and the jug should always be wrapped round with doubled butter muslin, of which the lower part dips constantly into the water. The basin should be stood in a cool and airy place, carefully removed from a window opening on to standing water in tubs or tanks; from fly-breeding collections of decaying vegetation, stable refuse, or rubbish in the backyard; from drains, or from the sink. The milk should never be kept in the kitchen, or in the nursery or other living room, or near a lavatory, but in a good cold, airy larder with—in England—a northern aspect, or a similar room. It should be kept as far removed from other foods as possible, since it readily absorbs strong or bad odours.

It is of the greatest importance to cool down the milk *as soon as possible*, and to *keep it cool*, as well as free from dust and flies

(which carry germs), until used, since scalding and home sterilisation cannot be relied on to kill all the germs, and certain of them may survive and flourish in warm or tepid milk.

Where the food is prepared in bulk, and mixed before heating in Soxhlet or similar bottles, which is very preferable, the bottles must be cooled as soon as possible after heating, and put away without opening, as directed on pp. 108 and 127.

Cow's-Milk Mixtures.—It is necessary to preface any discussion on cow's-milk mixtures by saying that these should never be managed according to old-fashioned, haphazard methods. Each ingredient used in the mixtures must be *measured out*, and if the baby is to be properly nourished, and if all risk of digestive disturbance is to be avoided, the mother must have a clear knowledge of the special modification of cow's milk which is necessary to meet the baby's needs. In the sections in Chapter VI., in which the composition of human milk is contrasted with that of cow's milk, she will have seen the essential difference and need for such modification.

To the work of Dr. Rotch, an American physician, we owe the practical beginnings of the correct and scientific modification of cow's milk for babies. This knowledge has now become a science, and its application in practical feeding has become a fine art. Thus, to the medical profession, and indeed to the accumulated work of such, the mother will owe her knowledge of the necessary modification of cow's milk, and also the tables which are necessary to guide her in applying this knowledge practically. The acquisition of the knowledge referred to is, however, by itself of limited value, for the reason that babies are not machines but living creatures, and, as such, they all vary within limits in the way in which they respond to any standard of feeding. In her own ingenuity, therefore, will lie the secret of success, and the baby's good progress. The physician will always have to deal with hand-fed babies who form "difficult feeding cases," but as these are almost always cases which are difficult because they have been improperly fed at home, the question will be seen to be one which primarily belongs to mothers. It is the mothers who feed the babies, and are daily and hourly observing them, not the physicians. It requires no more than an average intelligence to understand the principles of correct infant feeding and the needs of infant nutrition, and I have no shadow of doubt

that a mother who understands the importance of this question—the far-reaching effect on the baby's after-life of an adequately nourished infancy—and her own responsibility on behalf of the baby she cannot nourish herself as nature intended, will not only make the subject her own, but will not be found wanting when extra time and trouble are required of her. In one direction or another all mothers give this abundantly.

The strength, and especially the richness of cow's milk, varies within limits with the diet of the cows, their breed, and milking period, &c., and in addition may vary with the honesty of those who handle the milk before it reaches the consumer; that is, it may be watered, or otherwise adulterated. If the mother, however, can obtain good rich *mixed* milk (not milk from one cow) from a reliable source known to her, the composition of the milk will be fairly uniform, so that an average standard may be taken for the preparation of the baby's mixtures. Our model, especially during the first few months of life, must be breast milk, and we must modify the cow's milk to imitate this, and to include the essential materials required for the sound building up of the child's body. It will then remain to ensure that the food is suitable for the individual baby. This can only be done by experiment, the test being the baby's condition—**Is it Thriving?** (see Chapter IV., *Summary of Factors in the Life of a Healthy Infant*). Not only do individual babies vary in their capacity for digesting the curd and fat of cow's milk, but breast milk varies within limits in its strength and richness, not only in one mother at different times in the day, and in the suckling period, but in different mothers. Hence one baby may require a weaker food, rich in fat, while another baby may require a stronger food, but less fat, and so on. It will, however, very rarely be difficult to find the suitable food for a healthy baby whose digestion has never been upset or weakened by unsuitable feeding.

Regulation of Strength of Cow's Milk.—The points to remember in regard to this are the following:—

1. Average cow's milk being more than twice as strong as breast milk, it is necessary to dilute it in order to make it weaker, and its flesh-forming ingredients similar in quantity to those of breast milk. When this has been done, owing to the fact that there is more curd-forming ingredient in cow's milk, the mixture forms a much harder curd in the baby's stomach than does breast milk, and therefore it

is necessary to use some special diluent, or other method which will soften the curd so that it will be more digestible for the baby. To make it experimentally, as soft and fine as the curd of breast milk, it is necessary to add about four or five times as much water to the milk, but this mixture would by itself be far too poor to nourish the baby.

2. It is necessary to *educate* the baby's stomach and bowel to deal with this milk which is not adapted to it, and therefore, *whatever the baby's age*, always to begin cow's-milk feeding by using at first a weaker strength, and only gradually reaching that which approximates to the strength of breast milk. The mother must specially remember this at the beginning of life, when beginning supplementary bottle feeding, after using condensed milk or patent foods, after an illness affecting the stomach or bowels, and after weaning.

It must be realised that to use such a weak mixture is to deprive the baby of the necessary quantity of flesh-forming ingredient. At the beginning of life, during the first two or three months, when the baby can only digest a very weak cow's-milk mixture, unless we are to risk digestive upset, such a loss is, I think, very serious, and many babies during this period are absolutely starved in the attempt to give them cow's-milk feeds which they can digest. Hence I would strongly advise mothers during this period, either to add white of egg to the mixtures, or to dilute them with whey instead of barley water, and so supply the due amount of flesh-forming ingredient in a form which the youngest baby can easily digest. A special scheme for the gradual introduction of cow's milk at different ages, after other feeding, is given on p. 166, and in this scheme it is recommended that the deficiency in flesh-forming ingredient be made up by the addition of whey or egg-white; and special mixtures for use with egg-white during the first three months of life are given on pp. 156-158, if whey, *which is preferable*, cannot be used.

3. It is advisable, having educated the child's digestion to deal with cow's milk of a similar strength to breast-milk comfortably, to gradually increase the strength of the milk till towards the end of the first year it is taking almost pure milk. Breast milk, after the first two or three weeks, would seem to remain fairly uniform in strength throughout the greater part of the suckling period, and does not increase in strength as time goes on, but the hand-fed

baby has to make up for a weaker mixture in the earlier months as a rule than it would have had on the breast; and if its digestion has been gradually educated to cow's milk, it will usually take the stronger milk well and materially benefit by it. Individual babies, however, vary, and some babies throughout the first year will digest and thrive better on a well-diluted milk. The mother must use her discretion here as to how much and how rapidly she can increase the strength of the cow's milk in the latter half of the first year, and if she only increases slowly and in small amounts at a time, guided by the rules given below, digestive upsets will be avoided.

4. Since it is very advisable to rear babies as above on a milk mixture in which the strength is *gradually increased*, because if this is done, they are not so exposed to and therefore likely to suffer from digestive troubles, I have given the mother tables of mixtures on pp. 145-158, explained on pp. 141-145. If she wishes to still further increase the milk strength in these mixtures, in the latter half of the first year, as indicated in the preceding paragraph, she should do so as described under *Making up Cow's-Milk Mixtures*.

In France, *undiluted* cow's milk completely sterilised, and in small feeds, is largely given to infants (Professor Budin's method), and it is stated that in many cases they digest it well. The method is on trial in Great Britain, and is advocated by some authorities, but experience of it and of its results is as yet too limited to form a decided opinion as to its value over feeding with diluted milk, and in any case its adoption cannot be recommended to mothers in the absence of medical advice and supervision. This method of feeding possesses, in my opinion, several disadvantages. It is unnatural to give a food more than twice as strong as nature intended, and very deficient in sugar, and also to give very small feeds, which is inevitable when so strong a food is given, since we know that the breast-fed baby takes large feeds of dilute milk. It is also very inadvisable to subject milk to prolonged heating (forty minutes) for the reasons given in Chapter VI., but this is essential, and also a Soxhlet or similar steriliser, if the baby is to digest pure milk; and if sodium citrate is given to soften the curd, and the milk merely scalded or pasteurised, we are introducing as a permanency a drug into the baby's diet, and formed motions which are not natural in infancy,

or even constipation would seem to be a not uncommon result. A further objection to the method lies in the risk of digestive upset, and it is better to prevent such by using a diluted mixture if the baby thrives on it, even if more trouble is involved in the preparation, than to wait to use one after one has occurred. Babies are very seriously upset, and their digestions and nutritions are often left for a long while impaired, if too strong a mixture has been given. In the absence of means for the careful modification of good milk, *to include the due amount of fat*, the method might commend itself in that the baby would stand a better chance of being more efficiently nourished than a large number of hand-fed babies are, but circumstances are difficult to imagine, among the educated classes at any rate, where such means are not available.

*Rules upon which the Strength of the Cow's Milk given
should depend.*

1. The baby's *digestion* must be watched—that is, its condition as evidenced by contentment, absence of fretfulness or crying between feeds, absence of colic, or vomiting, especially of lumps of curdy material. If this state of affairs exists, the milk mixture is not too strong. If the above symptoms are present, the mixture must be made weaker. For method, see *Making up Cow's-Milk Mixtures*.

2. The baby's *motions* must be watched. The mother will remember that two or three *soft, smooth, yellow* motions should be passed daily. If too frequent, or greenish stools containing lumps of curdy material are passed, she must, as above, reduce the strength temporarily, and be slower in increasing it.

3. The baby must be *regularly weighed*, and if, *in the absence of signs of indigestion, or abnormal motions*, it does not gain at least four ounces a week, the mother should try increasing the strength of the mixtures. It may be that the mixture is strong enough in flesh-forming ingredient for the baby's digestion, but that the fat is deficient. If, on investigation (see *Additional Fat, Use of*), the mother thinks this is the case, or if she finds that the baby does not digest the stronger mixture so well, she should try increasing the amount of cream, or butter emulsion, &c. It is advisable not to increase both the milk strength and the fat together, but to make

the change separately until she finds out what it is that the baby needs. For method, see *Making up Cow's-Milk Mixtures*.¹

Cow's-Milk Mixtures during the First Three Months of Life.—

The dilution, which it is safest to use during the first two or three months of life to ensure the baby's satisfactory digestion of that part of the flesh-forming ingredient which forms the hard curd of cow's milk, reduces the whole flesh-forming ingredient so much that the baby gets far less of this than it should have. Hence I have advised mothers, if possible, to use either *whey instead of barley water as diluent*, or to *add suitable quantities of white-of-egg mixture to the feeds*. This will give the baby the correct amount of flesh-forming ingredient in each feed in a form in which it can easily digest it.

A certain amount of time and trouble is involved in preparing whey, *though this is always to be preferred*, and *fat whey*, p. 517, which I would strongly recommend, is much more quickly made than ordinary whey. It takes very little time to prepare a white-of-egg mixture. The total quantity for the twenty-four hours can be prepared in the morning, and then added to the feeds as required. These total quantities are given in the recipe for *Egg-white Mixture* in Chapter VIII., and special tables of cow's-milk mixtures are given for use with egg-white on p. 156.

The baby's food must be prepared separately for each feed while using egg-white or whey, even if the preparation and scalding of the food in bulk according to the tables of twenty-four hour mixtures is contemplated later on. This is because egg-white cannot be heated above the temperature necessary to warm the feed for the baby's use, that is, just warm, and it is not advisable to boil whey, though it must be heated as described on p. 220.

If it is not by any means possible to use egg-white or whey, then the only alternative will be, after the first fortnight, to increase the milk strength by taking the baby as quickly as its digestion warrants through the mixtures until it is given, *as soon as possible*, that suitable for the *third to fifth month*, in which the milk strength is about equal to that of breast milk. Some babies by this method will do well, but others will not digest the milk well. In the latter case the child must be put on to Glaxo or Ideal condensed milk until the third month is complete. The points which should be remembered in

¹ If the baby does not digest a stronger or a richer mixture so well, it may be that it requires a larger-sized feed (see p. 130).

regard to the feeding during the first three months of life may be summed up as follows:—

1. The advantage of giving weak cow's-milk mixtures supplemented with egg-white or whey, from the beginning, is that, while fresh food is being given, the child's digestion is being gradually educated to deal with cow's milk, its best substitute food. If condensed milk or dried milk is given, this education is only delayed until later, since it is not safe to continue the use of a preserved food after the first two or three months.

2. The disadvantage of giving stronger cow's-milk mixtures than those indicated in the tables for this period of life is that they may upset the baby's digestion, and must in fact do this in more or less degree before they can be shown to be too strong, and it is of first importance to allow the digestion to develop soundly, and to avoid the use of a food which will tax it.

3. The disadvantage of using a preserved—well called by Dr. Eric Pritchard a "dead" food—is that this is never of such nutritional value to the child, and further involves a change of food later on which is much better avoided if possible.

If the egg-white mixtures are selected and the child does not thrive and put on weight very well from the beginning, the mother may try increasing the quantity of cream or milk (see *Alterations in Mixtures*); but will be well advised to drop egg-white and use whey, especially *fat whey*, p. 517, to make up the ordinary cow's-milk feeds, for on this babies thrive exceedingly well. Less milk should be taken in the feed, and that omitted replaced by extra whey, if the baby shows any signs of indigestion (see p. 140).

Use of Tables.—On pp. 145–150 I have given two tables of large mixtures, one for use when cream is given and the other for use when top milk is used, or when the additional fat is given in another form. These will be convenient for use with the Soxhlet set, or other arrangement where a number of feeds are prepared and heated in separate bottles at one time. Each of these mixtures represents the total quantity of food (including milk, diluent, &c.) required for twenty-four hours; and the quantity of milk given in the mixture and also of cream will indicate to the mother, whether she is using these tables or those for single feeds, the quantity of milk or cream to be ordered for the day. If the milk is to be stood and the top milk only used, double this quantity of milk will have to be ordered.

In those cases where it is guaranteed that it is the new early morning's milk which arrives at the house, and where ice can be used to keep it, and where the child is sufficiently old (over three months) to require no night feeds, the total quantity for twenty-four hours may be made up in the morning. In the other cases, which form the majority, the mixtures in each case should be made up in two halves on two separate occasions on the arrival of the milk. This is simple, and only means that half the quantity of each ingredient in the mixture must be taken on each occasion.

On pp. 151-156 I have given tables of suitable mixtures for different ages with cream, and without cream, which will be convenient for making up single feeds if this method is preferred.

On pp. 156-158 I have given tables of suitable mixtures for making up single feeds for the first three months of life, with egg-white and cream, and with egg-white without cream.

Making up Cow's-Milk Mixtures: *Twenty-four-hour Mixtures.*—The quantity of each ingredient (except lime water), such as sugar, cream, milk, cereal jelly, &c., should be measured successively in the graduated eight or ten ounce lipped glass (Fig. 18), and each as measured should be tipped into the graduated quart jug (see Fig. 17). Then, last of all, the diluent should be poured into the jug until the mark indicating the *total quantity* of the mixture required is reached. The direction in the table, "Barley water to make 1 pint," means that after the other ingredients have all been measured and mixed, sufficient barley water must be added to make the *whole mixture* up to 1 pint.

When using domestic measures (see *Domestic Measures*), the ingredients must be successively measured and tipped into an ordinary large jug, but the *diluent* must be added differently. That is, a *definite quantity* of the barley water must be added, and this definite quantity is given after each mixture in the tables for the convenience of those mothers who cannot obtain graduated vessels.

Single Feeds.—The quantities of each ingredient should be measured successively either by means of a teaspoon and tablespoon (filled level in the case of solids) and a cup; or a conical measuring glass, or a "medicine glass," and teaspoon. It will be convenient to put the ingredients as measured into the graduated lipped eight or ten ounce glass referred to above. The diluent, barley water or plain water as the case may be, should then be poured in until the mark

indicating the *total quantity* of the feed is reached. As above, note that "Barley water to make 7 ounces" means that after all the other ingredients have been measured and mixed, sufficient barley water must be added to make the *whole mixture* up to 7 ounces.

Failing such a graduated glass, it will be most convenient to measure the ingredients and put them directly into the feeding bottle, and the diluent should then be poured in (preferably through a funnel) up to the mark on the bottle corresponding with the required size of the feed. Thus in the absence of a graduated glass, graduated feeding bottles had better be used. All those bottles mentioned on pp. 123-124 are graduated except the Soxhlet bottles.

Failing a graduated glass or graduated feeding bottle, the ingredients must be tipped into an ordinary jug, but if this is done the *diluent* must again be added differently; that is, a *definite* quantity of the barley water or plain water must be added, and this definite quantity is given after each mixture in the tables for the convenience of mothers who might be so situated.

Use of Lime Water.—It is important to note that this must not be heated, and therefore that it must be added to each feed just before feeding. The same quantity of lime water should be added to each single feed as of milk sugar. Where the food has been prepared in bulk according to the twenty-four-hour tables, the mother must refer to the table of single feed mixtures. She must find the mixture corresponding in size to the one she is about to give the child, and add the same quantity of lime water, as is ordered of milk sugar in that feed. To give an instance in order to make this quite clear: if the mother is about to give a two and a half ounce feed she must turn up the single feed mixtures, find the two and a half ounce mixture, and seeing that one teaspoonful of milk sugar is added, she must add one teaspoonful of lime water to the baby's feed. It is important to note also that lime water must not be added to feeds containing egg-white.

Alterations in Mixtures.—If it is desired to increase or decrease the strength or richness of the mixtures, that is, to vary the quantity of milk or cream in them, proceed as follows:—

To Increase the Milk Strength.—Add the required quantity of extra milk, and *omit* an equal quantity of diluent in measuring this out. Always add small quantities of milk at a time, say one to two teaspoonfuls in a small feed, and three or four teaspoonfuls in a larger one.¹

¹ Remember to multiply these quantities by the number of feeds the child has in twenty-four hours, when using the twenty-four-hour tables.

To Decrease the Milk Strength.—Omit the required quantity of milk (a teaspoonful or a tablespoonful according to size of feed, as above), and *add* an equal quantity of extra diluent in measuring this out.

To Increase the Cream.—Add the required quantity of extra cream and *omit* an equal quantity of *milk* in measuring this out. Always add small quantities at a time, say half a teaspoonful. Remember that the thicker the cream the richer it is, and that about double the quantity ordered in the mixtures should be taken when thin cream is used, since it is assumed in all the tables that a moderately thick cream is used.

To Decrease the Cream.—Omit the required quantity of cream, say half a teaspoonful, and *add* an equal quantity of extra milk.

Domestic Measures.

Half a teaspoonful is approximately *thirty drops*.

Four teaspoonfuls should be taken to be *one tablespoonful*.

One level tablespoonful should be taken to be *half an ounce*.

Two level tablespoonfuls should be taken to be *one ounce*.

A full wine-glass (port or sherry, not claret) holds *two ounces*.

A teacup holds *five ounces*.

A breakfast-cup or an ordinary *full-sized tumbler* each hold *ten ounces* (*half a pint*).

Two breakfast-cups hold *one pint* (*twenty ounces*).

Four breakfast-cups hold *one quart* (*forty ounces*).

TABLE OF COW'S-MILK MIXTURES SUITABLE FOR DIFFERENT AGES¹

QUANTITIES FOR TWENTY-FOUR HOURS WITHOUT CREAM

Third to Fifth Day

Cow's milk	2½ ounces
Milk sugar	1 ounce
Barley water to make	15 ounces

Note.—If domestic measures are used, add 11 ounces 4 teaspoonfuls of barley water.

¹ These mixtures are very deficient in fat, and therefore top milk must be used, or else fat must be given additionally.

Fifth to Tenth Day

Cow's milk	.	.	.	.	3 ounces 6 teaspoonfuls
Milk sugar	.	.	.	.	1 ounce
Barley water to make	.	.	.	.	15 ounces

Note.—If domestic measures are used, add 10 ounces 2 teaspoonfuls of barley water.

Tenth to Twenty-eighth Day

Cow's milk	.	.	.	.	6 ounces 6 teaspoonfuls
Milk sugar	.	.	.	.	1 ounce 4 teaspoonfuls
Barley water to make	.	.	.	.	25 ounces

Note.—If domestic measures are used, add 16 ounces 6 teaspoonfuls of barley water.

First to Second Month

Cow's milk	.	.	.	.	10 ounces 6 teaspoonfuls
Milk sugar	.	.	.	.	1 ounce 6 teaspoonfuls
Barley water to make	.	.	.	.	31½ ounces

Note.—If domestic measures are used, add 19 ounces of barley water.

Second to Third Month

Cow's milk	.	.	.	.	11 ounces 4 teaspoonfuls
Milk sugar	.	.	.	.	1 ounce 5 teaspoonfuls
Barley water to make	.	.	.	.	32 ounces

Note.—If domestic measures are used, add 19 ounces of barley water.

Third to Fifth Month

Cow's milk	.	.	.	.	.	.	20 ounces
Milk sugar	.	.	.	.	.	.	2 ounces
Barley water to make	.	.	.	.	.	.	40 ounces

Note.—If domestic measures are used, add 18 ounces of barley water.

Fifth to Seventh Month

Cow's milk	28 ounces
Milk sugar	2½ ounces
Barley water to make	49 ounces

Note.—If domestic measures are used, add 18½ ounces of barley water.

Seventh to Eighth Month

Cow's milk	31½ ounces
Milk sugar	2 ounces
Barley water to make	49 ounces

Note.—If domestic measures are used, add 15 ounces 4 teaspoonfuls of barley water.

Eighth to Ninth Month

Cow's milk	34 ounces 2 teaspoonfuls
Milk sugar	1 ounce 6 teaspoonfuls
Cereal jelly, ¹	1½ ounce
Boiled water to make	48 ounces

Note.—If domestic measures are used, add 10 ounces 4 teaspoonfuls of boiled water.

Ninth to Tenth Month

Cow's milk	38½ ounces
Milk sugar	2 ounces
Cereal jelly ¹	2 ounces 2 teaspoonfuls
Boiled water to make	54 ounces

Note.—If domestic measures are used, add 11 ounces 2 teaspoonfuls of boiled water.

¹ It is advisable to alternate the cereal jelly with a malted food (see *Malted Foods*).

Tenth to Twelfth Month

Cow's milk	38½ ounces
Milk sugar	2 ounces
Cereal jelly	3 ounces
Boiled water to make	54 ounces

Note.—If domestic measures are used, add 10 ounces 4 teaspoonfuls of boiled water.

TABLE OF COW'S-MILK MIXTURES SUITABLE FOR DIFFERENT AGES

QUANTITIES FOR TWENTY-FOUR HOURS WITH CREAM

Third to Fifth Day

Cow's milk	1 ounce 6 teaspoonfuls
Cream	6 teaspoonfuls
Milk sugar	1 ounce
Barley water to make	15 ounces

Note.—If domestic measures are used, add 11 ounces 4 teaspoonfuls of barley water.

Fifth to Tenth Day

Cow's milk	3 ounces
Cream	6 teaspoonfuls
Milk sugar	1 ounce
Barley water to make	15 ounces

Note.—If domestic measures are used, add 10 ounces 2 teaspoonfuls of barley water.

Tenth to Twenty-eighth Day

Cow's milk	5 ounces 2 teaspoonfuls
Cream	1 ounce 4 teaspoonfuls
Milk sugar	1 ounce 4 teaspoonfuls
Barley water to make	25 ounces

Note.—If domestic measures are used, add 16 ounces 6 teaspoonfuls of barley water.

First to Second Month

Cow's milk	.	.	.	.	9 ounces
Cream	.	.	.	.	1 ounce 6 teaspoonfuls
Milk sugar	.	.	.	.	1 ounce 6 teaspoonfuls
Barley water to make	.	.	.	.	31½ ounces

Note.—If domestic measures are used, add 19 ounces of barley water.

Second to Third Month

Cow's milk	.	.	.	.	9 ounces 6 teaspoonfuls
Cream	.	.	.	.	1 ounce 6 teaspoonfuls
Milk sugar	.	.	.	.	1 ounce 5 teaspoonfuls
Barley water to make	.	.	.	.	32 ounces

Note.—If domestic measures are used, add 19 ounces of barley water.

Third to Fifth Month

Cow's milk	.	.	.	.	.	.	18 ounces
Cream	.	.	.	.	.	.	2 ounces
Milk sugar	.	.	.	.	.	.	2 ounces
Barley water to make	.	.	.	.	.	.	40 ounces

Note.—If domestic measures are used, add 18 ounces of barley water.

Fifth to Seventh Month

Cow's milk	.	.	.	.	25 ounces 5 teaspoonfuls
Cream	.	.	.	.	2 ounces 3 teaspoonfuls
Milk sugar	.	.	.	.	2½ ounces
Barley water to make	.	.	.	.	49 ounces

Note.—If domestic measures are used, add 18½ ounces of barley water.

Seventh to Eighth Month

Cow's milk	.	.	.	.	29 ounces
Cream	.	.	.	.	2 ounces 4 teaspoonfuls
Milk sugar	.	.	.	.	2 ounces
Barley water to make	.	.	.	.	49 ounces

Note.—If domestic measures are used, add 15 ounces 4 teaspoonfuls of barley water.

Eighth to Ninth Month

Cow's milk	.	.	.	.	32 ounces 2 teaspoonfuls
Cream	.	.	.	.	2 ounces
Milk sugar	.	.	.	.	1 ounce 6 teaspoonfuls
Cereal jelly ¹	.	.	.	.	1½ ounce
Boiled water to make	.	.	.	.	48 ounces

Note.—If domestic measures are used, add 10 ounces 4 teaspoonfuls of boiled water.

Ninth to Tenth Month

Cow's milk	.	.	.	.	36 ounces 4 teaspoonfuls
Cream	.	.	.	.	2 ounces
Milk sugar	.	.	.	.	2 ounces
Cereal jelly ¹	.	.	.	.	2 ounces 2 teaspoonfuls
Boiled water to make	.	.	.	.	54 ounces

Note.—If domestic measures are used, add 11 ounces 2 teaspoonfuls of boiled water.

Tenth to Twelfth Month

Cow's milk	.	.	.	.	36 ounces 4 teaspoonfuls
Cream	.	.	.	.	2 ounces
Milk sugar	.	.	.	.	2 ounces
Cereal jelly	.	.	.	.	3 ounces
Boiled water to make	.	.	.	.	54 ounces

Note.—If domestic measures are used, add 10 ounces 4 teaspoonfuls of boiled water.

¹ It is advisable to alternate the cereal jelly with a malted food (see *Malted Foods*).

TABLE OF COW'S-MILK MIXTURES SUITABLE FOR DIFFERENT AGES

SINGLE FEEDS WITHOUT CREAM¹

Third to Fifth Day

Cow's milk	.	.	.	.	.	.	2	teaspoonfuls
Milk sugar	.	.	.	.	.	.	$\frac{3}{4}$	teaspoonful
Barley water to make	.	.	.	.	.	.	$1\frac{1}{2}$	ounce

Note.—If domestic measures are used, add 1 ounce 1 teaspoonful of barley water.

Fifth to Tenth Day

Cow's milk	.	.	.	.	.	.	3	teaspoonfuls
Milk sugar	.	.	.	.	.	.	$\frac{3}{4}$	teaspoonful
Barley water to make	.	.	.	.	.	.	$1\frac{1}{2}$	ounce

Note.—If domestic measures are used, add 1 ounce of barley water.

Tenth to Twenty-eighth Day

Cow's milk	.	.	.	.	.	.	$5\frac{1}{2}$	teaspoonfuls
Milk sugar	.	.	.	.	.	.	1	teaspoonful
Barley water to make	.	.	.	.	.	.	$2\frac{1}{2}$	ounces

Note.—If domestic measures are used, add 1 ounce 6 teaspoonfuls of barley water

First to Second Month

Cow's milk	.	.	.	.	.	.	1 ounce	$1\frac{1}{2}$ teaspoonful
Milk sugar	.	.	.	.	.	.	$1\frac{1}{2}$	teaspoonful
Barley water to make	.	.	.	.	.	.	$3\frac{1}{2}$	ounces

Note.—If domestic measures are used, add 2 ounces 1 teaspoonful of barley water.

¹ These mixtures are very deficient in fat, therefore top milk must be used or fat must be given additionally.

Second to Third Month

Cow's milk	.	.	.	.	1 ounce 4 teaspoonfuls
Milk sugar	.	.	.	.	1½ teaspoonful
Barley water to make	.	.	.	.	4 ounces

Note.—If domestic measures are used, add 2 ounces 3 teaspoonfuls of barley water.

Third to Fifth Month

Cow's milk	.	.	.	.	2 ounces 4 teaspoonfuls
Milk sugar	.	.	.	.	2 teaspoonfuls
Barley water to make	.	.	.	.	5 ounces

Note.—If domestic measures are used, add 2 ounces 2 teaspoonfuls of barley water.

Fifth to Seventh Month

Cow's milk	.	.	.	.	.	4 ounces
Milk sugar	.	.	.	.	.	3 teaspoonfuls
Barley water to make	.	.	.	.	.	7 ounces

Note.—If domestic measures are used, add 2 ounces 5 teaspoonfuls of barley water.

Seventh to Eighth Month

Cow's milk	.	.	.	.	.	4½ ounces
Milk sugar	.	.	.	.	.	2½ teaspoonfuls
Barley water to make	.	.	.	.	.	7 ounces

Note.—If domestic measures are used, add 2 ounces 2 teaspoonfuls of barley water.

Eighth to Ninth Month

Cow's milk	.	.	.	.	5 ounces 6 teaspoonfuls
Milk sugar	.	.	.	.	2 teaspoonfuls
Cereal jelly ¹	.	.	.	.	2 teaspoonfuls
Boiled water to make	.	.	.	.	8 ounces

Note.—If domestic measures are used, add 1 ounce 6 teaspoonfuls of boiled water.

¹ It is advisable to alternate the cereal jelly with a malted food (see *Malted Foods*).

Ninth to Tenth Month

Cow's milk	.	.	.	.	6 ounces 4 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Cereal jelly ¹	.	.	.	.	3 teaspoonfuls
Boiled water to make	.	.	.	.	9 ounces

Note.—If domestic measures are used, add 1 ounce 6 teaspoonfuls of boiled water.

Tenth to Twelfth Month

Cow's milk	.	.	.	.	6 ounces 4 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Cereal jelly	.	.	.	.	4 teaspoonfuls
Boiled water to make	.	.	.	.	9 ounces

Note.—If domestic measures are used, add 1 ounce 5 teaspoonfuls of boiled water.

TABLE OF COW'S-MILK MIXTURES SUITABLE FOR DIFFERENT AGES

SINGLE FEEDS WITH CREAM

Third to Fifth Day

Cow's milk	.	.	.	.	.	1½ teaspoonful
Cream	.	.	.	.	.	½ teaspoonful
Milk sugar	.	.	.	.	.	¾ teaspoonful
Barley water to make	.	.	.	.	.	1½ ounce

Note.—If domestic measures are used, add 1 ounce 1 teaspoonful of barley water.

Fifth to Tenth Day

Cow's milk	.	.	.	.	.	2½ teaspoonfuls
Cream	.	.	.	.	.	½ teaspoonful
Milk sugar	.	.	.	.	.	¾ teaspoonful
Barley water to make	.	.	.	.	.	1½ ounce

Note.—If domestic measures are used, add 1 ounce of barley water.

¹ It is advisable to alternate the cereal jelly with a malted food (see *Malted Foods*).

Tenth to Twenty-eighth Day

Cow's milk	.	.	.	.	.	.	4	teaspoonfuls
Cream	.	.	.	.	.	.	1	teaspoonful
Milk sugar	.	.	.	.	.	.	1	teaspoonful
Barley water to make	.	.	.	.	.	.	2½	ounces

Note.—If domestic measures are used, add 1 ounce 6 teaspoonfuls of barley water.

First to Second Month

Cow's milk	.	.	.	.	.	.	1	ounce
Cream	.	.	.	.	.	.	1½	teaspoonful
Milk sugar	.	.	.	.	.	.	1½	teaspoonful
Barley water to make	.	.	.	.	.	.	3½	ounces

Note.—If domestic measures are used, add 2 ounces 1 teaspoonful of barley water.

Second to Third Month

Cow's milk	.	.	.	.	.	.	1 ounce 2	teaspoonfuls
Cream	.	.	.	.	.	.	2	teaspoonfuls
Milk sugar	.	.	.	.	.	.	1½	teaspoonful
Barley water to make	.	.	.	.	.	.	4	ounces

Note.—If domestic measures are used, add 2 ounces 3 teaspoonfuls of barley water.

Third to Fifth Month

Cow's milk	.	.	.	.	.	.	2 ounces 2	teaspoonfuls
Cream	.	.	.	.	.	.	2	teaspoonfuls
Milk sugar	.	.	.	.	.	.	2	teaspoonfuls
Barley water to make	.	.	.	.	.	.	5	ounces

Note.—If domestic measures are used, add 2 ounces 2 teaspoonfuls of barley water.

Fifth to Seventh Month

Cow's milk	.	.	.	.	3 ounces 5 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Barley water to make	.	.	.	.	7 ounces

Note.—If domestic measures are used, add 2 ounces 5 teaspoonfuls of barley water.

Seventh to Eighth Month

Cow's milk	.	.	.	.	4 ounces 1 teaspoonful
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	2½ teaspoonfuls
Barley water to make	.	.	.	.	7 ounces

Note.—If domestic measures are used, add 2 ounces 2 teaspoonfuls of barley water.

Eighth to Ninth Month

Cow's milk	.	.	.	.	5 ounces 3 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	2 teaspoonfuls
Cereal jelly ¹	.	.	.	.	2 teaspoonfuls
Boiled water to make	.	.	.	.	8 ounces

Note.—If domestic measures are used, add 1 ounce 6 teaspoonfuls of boiled water.

Ninth to Tenth Month

Cow's milk	.	.	.	.	6 ounces 1 teaspoonful
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Cereal jelly ¹	.	.	.	.	3 teaspoonfuls
Boiled water to make	.	.	.	.	9 ounces

Note.—If domestic measures are used, add 1 ounce 6 teaspoonfuls of boiled water.

¹ It is advisable to alternate the cereal jelly with a malted food (see *Malted Foods*).

Tenth to Twelfth Month

Cow's milk	.	.	.	.	6 ounces 1 teaspoonful
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Cereal jelly	.	.	.	.	4 teaspoonfuls
Boiled water to make.	.	.	.	.	9 ounces

Note.—If domestic measures are used, add 1 ounce 5 teaspoonfuls of boiled water.

TABLE OF COW'S-MILK MIXTURES FOR FIRST THREE MONTHS OF LIFE

SINGLE FEEDS WITH EGG-WHITE WITHOUT CREAM¹

Third to Fifth Day

Cow's milk	.	.	.	.	.	2 teaspoonfuls
Milk sugar	.	.	.	.	.	$\frac{3}{4}$ teaspoonful
Egg-white mixture	.	.	.	.	.	3 teaspoonfuls
Boiled water to make	.	.	.	.	.	1 $\frac{1}{2}$ ounce

Note.—If domestic measures are used, add 6 teaspoonfuls of boiled water.

Fifth to Tenth Day

Cow's milk	.	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	.	$\frac{3}{4}$ teaspoonful
Egg-white mixture	.	.	.	.	.	3 teaspoonfuls
Boiled water to make	.	.	.	.	.	1 $\frac{1}{2}$ ounce

Note.—If domestic measures are used, add 5 teaspoonfuls of boiled water.

Tenth to Twenty-eighth Day

Cow's milk	.	.	.	.	.	5 $\frac{1}{2}$ teaspoonfuls
Milk sugar	.	.	.	.	.	1 teaspoonful
Egg-white mixture	.	.	.	.	.	5 teaspoonfuls
Boiled water to make	.	.	.	.	.	2 $\frac{1}{2}$ ounces

Note.—If domestic measures are used, add 1 ounce 1 teaspoonful of boiled water.

¹ These mixtures are very deficient in fat, therefore unless top milk is used, fat must be given additionally.

First to Second Month

Cow's milk	1 ounce $1\frac{1}{2}$ teaspoonful
Milk sugar	$1\frac{1}{2}$ teaspoonful
Egg-white mixture	7 teaspoonfuls
Barley water to make	$3\frac{1}{2}$ ounces

Note.—If domestic measures are used, add 1 ounce 2 teaspoonfuls of barley water.

Second to Third Month

Cow's milk	1 ounce 4 teaspoonfuls
Milk sugar	$1\frac{1}{2}$ teaspoonful
Egg-white mixture	6 teaspoonfuls
Barley water to make	4 ounces

Note.—If domestic measures are used, add 1 ounce $4\frac{1}{2}$ teaspoonfuls of barley water.

TABLE OF COW'S-MILK MIXTURES FOR FIRST THREE MONTHS OF LIFE

SINGLE FEEDS WITH EGG-WHITE AND CREAM

Third to Fifth Day

Cow's milk	$1\frac{1}{2}$ teaspoonful
Cream	$\frac{1}{2}$ teaspoonful
Milk sugar	$\frac{3}{4}$ teaspoonful
Egg-white mixture	3 teaspoonfuls
Boiled water to make	$1\frac{1}{2}$ ounce

Note.—If domestic measures are used, add 6 teaspoonfuls of boiled water.

Fifth to Tenth Day

Cow's milk	$2\frac{1}{2}$ teaspoonfuls
Cream	$\frac{1}{2}$ teaspoonful
Milk sugar	$\frac{3}{4}$ teaspoonful
Egg-white mixture	3 teaspoonfuls
Boiled water to make	$1\frac{1}{2}$ ounce

Note.—If domestic measures are used, add 5 teaspoonfuls of boiled water.

Tenth to Twenty-eighth Day

Cow's milk	.	.	.	.	.	.	4	teaspoonfuls
Cream	.	.	.	.	.	.	1	teaspoonful
Milk sugar	.	.	.	.	.	.	1	teaspoonful
Egg-white mixture	.	.	.	.	.	.	5	teaspoonfuls
Boiled water to make	.	.	.	.	.	.	2½	ounces

Note.—If domestic measures are used, add 1 ounce 1 teaspoonful of boiled water.

First to Second Month

Cow's milk	.	.	.	.	.	.	1	ounce
Cream	.	.	.	.	.	.	1½	teaspoonful
Milk sugar	.	.	.	.	.	.	1½	teaspoonful
Egg-white mixture	.	.	.	.	.	.	7	teaspoonfuls
Barley water to make	.	.	.	.	.	.	3½	ounces

Note.—If domestic measures are used, add 1 ounce 2 teaspoonfuls of barley water

Second to Third Month

Cow's milk	.	.	.	.	.	.	1	ounce 2	teaspoonfuls
Cream	.	.	.	.	.	.	2	teaspoonfuls	
Milk sugar	.	.	.	.	.	.	1½	teaspoonful	
Egg-white mixture	.	.	.	.	.	.	6	teaspoonfuls	
Barley water to make	.	.	.	.	.	.	4	ounces	

Note.—If domestic measures are used, add 1 ounce 4½ teaspoonfuls of barley water.

Sugar.—It is very much better to use *milk sugar* for sweetening all foods for infants, which require this, than ordinary white sugar. Milk sugar can be bought of any large grocer or chemist, and will be cleaner in tins than by the pound, and its only objection is its greater cost, from 1s. to 2s. a pound. Milk sugar should be added to all foods which require sweetening in the proportion of one ounce (two level tablespoonfuls) of sugar to one pint (two breakfast-cupfuls) of food. Ordinary white sugar should be added in the

proportion of five level teaspoonfuls of sugar to one pint of food ; that is, about one-third less of ordinary sugar than of milk sugar. In all the mixtures given in the cow's-milk tables, if ordinary sugar is used, about one-third less must be taken ; that is, if three teaspoonfuls of milk sugar are ordered, about two level teaspoonfuls of ordinary sugar should be taken. Whichever sugar is used, it should always be carefully measured by means of spoons filled *level*, since an excess upsets the digestion by fermenting in the bowel. The sugar should always be completely dissolved in a little of the diluent before being added to the mixture.

When substitute feeds of whey, egg-white water, veal broth, cream and whey mixture, or plain barley water are given to the baby in illness, these should be sweetened according to the size of the feed ; and the same remark applies to boiled water given to the new-born baby, or to a child suffering from summer diarrhœa. Usually in the case of the foods named the mother will give the same quantity at a feed as the child is used to taking of ordinary food, and if she then refers to the tables of single feed cow's-milk mixtures she will see in the feed suitable to the child's age the correct amount of sugar to add. Roughly, she may add half a teaspoonful of milk sugar for every ounce of food, or a *small* half teaspoonful of ordinary sugar, but half this for *whey* feeds.

Excess of sugar, as of starch, may cause flatulence or sore buttocks, and the passage of frothy and sour-smelling motions.

Lime Water.—This is a very useful addition to cow's-milk feeding, to counteract the tendency to sourness, and to aid in softening the curd. It should be added in the same proportion as milk sugar, and therefore the quantity given for milk sugar in each mixture in the Single Feed Tables is the correct quantity to use of lime water for the same sized feed. It is important to note that the lime water should be added after the food has been heated ; that is, put into the bottle just before feeding.

Additional Fat.—A due amount of fat is one of the most important essentials of all in the feeding of infants, and it is the one which is the most often omitted. Additional fat must essentially be given to make up the deficiency of fat in the food in feeding with condensed milk, especially the sweetened brands, and with all patent foods except Glaxo.

In the case of Cow's-Milk Feeding.—Unless a very good rich

milk is obtained, and the upper half only of the pint or quart used after standing five hours (top milk) to prepare the baby's food, additional fat must always be given. Where milk is bought, except from a few large town dairies in England, in perhaps very few cases is a sufficiently rich milk obtainable to supply sufficient fat in the top milk after standing five hours. This milk would contain more fat in some cases if it could stand longer, say twelve hours, but to stand it for this length of time after arrival would be impossible, since it would mean in the vast majority of cases that dangerously old milk would be given to the child; namely, milk kept for twelve hours in the house, and probably the same length of time, or inevitably several hours from the time it was milked before it reached the consumer. It is also only safe to stand milk in warm weather at all, in a refrigerator, which is not available in every household. Therefore the use of top milk will be limited to a great extent to those who keep their own cows, and to the winter season; and most mothers will have to obtain as rich a milk as possible, and give additional fat with the feeds.

Cream.—Where perfectly reliable cream—that is, cream which is *uncontaminated, fresh, and free from preservatives*—can be obtained, this should be used to supply the necessary fat. Cream is really very rich milk, thick or thin according to the amount of fat it contains, and being largely composed of milk, it contains almost as much flesh-forming ingredient as ordinary milk.

Cream may be either *very thick*, or *moderately thick* or *thin*. In London and many large towns cream, as bought, is most usually moderately thick—sometimes very thick. In the country and in the Colonies, as a rule, a thin cream is the one most usually obtained. Cream which is obtained at home by skimming the top off a good rich milk after standing is usually a thin cream. I have in all my tables assumed that moderately thick cream is used. If thin cream is used, as much again must be taken as the quantity ordered, and in such case as much cow's milk must be omitted in the mixtures as extra cream is added.¹ Bought cream should always be ordered in small quantities, just sufficient to cover the amount necessary for the day's use, and not kept overnight. The amount

¹ If a very thick cream should chance to be used, it should be mixed with a little milk, just sufficient to make it a moderately thick cream, and then this should be used to add to the feeds.

required for the day will be found in the table of cow's-milk mixtures with cream for twenty-four hours, suitable for the child's age. The cream should be tasted on arrival, to ensure that it is sweet, and it should be kept cool with the same precautions as in the case of milk.

Suitable quantities of cream for cow's-milk mixtures are given in the tables of these. The baby who has much difficulty in digesting cow's milk may not take cream so well as the other fats to be mentioned, but it should, if obtainable, always be tried. Smaller quantities of cream should be taken than those indicated in the mixtures if it is thought that these are too rich, the quantity omitted being replaced by an equal quantity of extra milk.

Suitable quantities of cream for condensed milk mixtures are given in the tables of these. In other cases, in general, thick cream should be used in the following proportions:—

$\frac{1}{2}$ a teaspoonful in a 1 to $1\frac{1}{2}$ ounce feed.

$\frac{3}{4}$ of a teaspoonful in a 2 to 3 ounce feed.

1 teaspoonful in a 3 to 4 ounce feed.

$1\frac{1}{2}$ teaspoonful in a 4 to 5 ounce feed.

2 teaspoonfuls in a 5 to 7 ounce feed.

$2\frac{1}{2}$ teaspoonfuls in a 7 to 8 ounce feed.

$2\frac{1}{2}$ to 3 teaspoonfuls in an 8 to 9 ounce feed.

If a thin cream is used, as much again should be given. In some cases more of the thick cream can be given, and may be digested well, but an excess of fat is very likely to produce a constant return of sour or rancid material after the feeds, and sometimes vomiting and the passage of loose offensive and irritating motions, which may cause soreness of the buttocks. If any of these symptoms are noted, the cream or other fat which is being given must be reduced.

During travelling, or when fresh cream is not obtainable, it is very advisable to use a *good brand* of tinned sterilised cream. Such brands are Dahl's Gold Medal Double Cream, or "Real Swiss Cream" (Bernese Alps Company). Such creams are more easily obtainable in the Colonies than in England as a general rule.¹ They are very much safer, I think, than cream which is not absolutely fresh and uncontaminated, and they often seem to be more easily digested by infants than raw cream. The cream should be ensured to be fresh when opened, and should be kept very cool

¹ These are obtainable at the Army and Navy Stores, London.

and should not be used for the baby on the day after opening unless kept on ice.

In cases where cream is not obtainable, or where it is not digested well, the fat should be given in the form of butter as an emulsion, or of egg-yolk ; and both these are in my opinion greatly to be preferred to cod-liver-oil, which is, however, if neither can be given, the only remaining animal fat which can be used for an infant.

Butter Emulsion.—This is nearly always very well digested by the baby, and its only objection is that it needs to be prepared, but this takes a very short time. It is advisable to give fat to babies in the form of a creamy liquid, or *emulsion*, as it exists in cream.

To make butter emulsion : Take two teaspoonfuls of lime water and place in a small bottle. Stand the bottle in a jug in water just as hot as the hand can bear. Take a heaped teaspoonful of good pure butter, as little salted as possible. Put it into a teacup. Stand the teacup in a basin of water just as hot as the hand can bear. Stir round till the butter is *just melted* so as to be liquid. When the lime water is hot, pour the melted butter into it. Cork the bottle and shake up well for two or three minutes till a smooth creamy liquid results. On standing the butter separates out and solidifies, but should be stood in warm water for a few minutes and well shaken again before use. One teaspoonful of this mixture contains about as much fat as a teaspoonful of thick cream, and therefore if the baby digests it well it should be given in the same quantities as cream. A quarter of a teaspoonful should be added at first to two or three feeds in the day. This should then be increased gradually till in about a week half a teaspoonful is given. Extra doses should then be added until the baby takes half a teaspoonful in each feed. The quantity may then be gradually increased as the baby digests it well until the same amount as of cream suggested for its age is being given. The butter emulsion must be *warm* and liquid when added to the feed, and it should be added to the feed when this has been warmed for use, just before feeding. The bottle should be well shaken two or three times during feeding.

If the baby returns more than a mouthful or so of its feed, or if it should be sick after the feed, or if loose, greasy, or rancid smelling and irritating motions are passed, the quantity should be reduced. Babies vary in their capacity for digesting fat, and some will only be able to digest a smaller dose than others.

Yolk of Egg.—The yolk of an egg is very rich in easily digestible fat, and it also contains not only a plentiful supply of lime salts which are used in the building up of bone, but also those special substances which aid in the building up of the nervous system, and which exist so much more abundantly in breast milk than in cow's milk. It therefore forms a very suitable and convenient fat food for infants, and is usually readily digested by them. The broken yolk of an average egg about fills one tablespoon, and the amount of fat it contains is almost equal to that in a tablespoonful of moderately thick cream. Hence it can be used in the same doses as cream or butter emulsion, in a quantity not exceeding a yolk in a day. The yolk should be broken and stirred, but not beaten, and if poured into a small bottle previously rinsed with warm water, and tightly corked or stoppered, it will not dry up as it quickly does if exposed to the air, and it can be poured out as required for the feeds. A quarter of a teaspoonful of the raw yolk should be added to a feed at first and shaken up in it, and the amount should then be increased as the baby digests it well to half, one, or two teaspoonfuls at a time, according to the size of the feed, as recommended above for the use of cream. It is very advisable to give the child two or three egg-yolks a week in this way, and especially if condensed milk or other preserved food is being given.

Virol.—The fresh yolk of egg is very preferable to Virol, which is sometimes given to babies as a means of supplying fat, since Virol contains much less fat, is rather sweet, and is preserved. In the absence of cream, fresh eggs, or when butter emulsion cannot be prepared, however, Virol (a quarter of a teaspoonful gradually increased to one teaspoonful in each feed) may be useful, and especially so in the case of delicate babies who cannot after careful trial digest a larger quantity of fat in any other form.

Cod-Liver-Oil.—While cod-liver-oil is a valuable means of giving fat to older children in certain conditions of ill-health, it is not I think the best form in which to give fat as a food to healthy babies. It is a medicinal substance, and in my experience babies, especially in the earlier months, seldom digest it well. It very often makes them sick if more than a few drops are given, and where it does not do this much of the oil passes away in the motions. It is not easy to make a good emulsion of cod-liver-oil, and the

emulsions on the market, and also the more palatable malt and cod-liver-oil preparations, cannot be given to infants. Therefore if cod-liver-oil is selected as a means of giving fat, it is best given as follows: Put a level teaspoonful of soft white sugar into a cup, and pour on to it just sufficient *boiling* water to make a syrup. Put this with an ounce of cold lime water into a medicine bottle, add an ounce of cod-liver-oil, cork and shake vigorously to and fro till a creamy mixture results. The oil separates out as soon as the mixture is allowed to stand, so that it should be well shaken immediately before the dose is measured out and given to the child. It should be given immediately after a feed (for if given in the feed the baby will often refuse the feed), and the mouth should be well wiped out with a moistened rag after it. It must never be given on an empty stomach, and must be given at first in very small doses of, say, a quarter of a teaspoonful of the above emulsion three times a day. This amount should then be increased by the addition of one drop or so every few days until, *if the child digests it well*, about a teaspoonful is given after three feeds in the day. The oil should be temporarily suspended during very hot days, or when the child is not very well. If it should constantly return more than a mouthful or so of its feed, or if it should be sick after the feed, or if the oil is seen in the motions, it is far better to substitute fat in another more palatable and more easily digestible and suitable form, than to reduce the quantity so much that the child has much less fat than it should have.

Starchy Food.—Towards the end of the first year the child essentially needs some starchy food. From the eighth or ninth to the twelfth month this may be given as predigested starch (see *Starch*) and as unchanged starch alternately; that is to say, a malted patent food should be added to one feed and a cereal jelly (see *Recipes*) to the next, or the one given one day and the other the next. The cereal jelly should be thoroughly well cooked, should be selected for its nutritive value, and should be given in the quantities indicated in the tables of cow's-milk mixtures, and suggested dietaries for the first half of the second year. Barley water should be replaced by boiled water as diluent in the mixtures when starchy food of either kind is added.

For the malted food, two teaspoonfuls of Theinhardt's Infantina, or failing this two teaspoonfuls of Hovis Food No. 2, should be

given in a feed, using the ordinary proportions of milk and water which are given in the tables of cow's-milk mixtures. The malted food should always replace the sugar in the mixtures, and should never be added to sweetened condensed milk mixtures. It will be more convenient, and also preferable if the milk has already been boiled, to prepare the quantity necessary for the day and add this to the feeds as required, as follows: Mix three *level* tablespoonfuls of Infantina, or of Hovis Food No. 2, smoothly with a little cold water; add this to six tablespoonfuls of cold water in an enamelled saucepan and heat, stirring well, just to boiling point. It is advisable to boil the Infantina for about three minutes. Add one tablespoonful of the above mixture to each feed before warming it for use. Four and a half tablespoonfuls of the Food and nine tablespoonfuls of water may be taken in the preparation at ten months; and one and a half tablespoonful given in each feed.

If malted food is to be used for the baby between the sixth and eighth months, five teaspoonfuls of either of the above foods and two and a half tablespoonfuls of water should be used in the preparation; and three and a half teaspoonfuls given in three feeds in the day.

If cream is not added to the feeds, as indicated in the tables of cow's-milk mixtures, one of the other fats mentioned must essentially be given. It is very advisable to give egg-yolk two or three times a week, as described under *Yolk of Egg*, and the child should have fresh fruit juice daily. Children's hard rusks (Zwieback), not soaked, or a hard, well-baked stale bread or toast crust or so, or "pulled bread," should be given to the child to chew daily at this age.

Babies during this period—the ninth to twelfth month—are frequently given a great deal too much starchy food. They are often also given this far too little cooked. Stomach-ache and flatulence are the common results of this wrong feeding; these symptoms, and the passage of sour-smelling, frothy, or irritating motions, should always lead the mother to reduce the amount of starch given, and to subject that given to more prolonged cooking.

Fresh Fruit Juice.—Well-sweetened orange or grape or strawberry juice strained through muslin should be given to all babies while being fed on condensed or sterilised milk, or patent foods.

To the baby *under three months*, a small half teaspoonful should be given three times a day between feeds.

From *three to eight months*, a teaspoonful three times a day

between feeds. From *eight to twelve months*, two teaspoonfuls twice a day before the first morning and an afternoon feed. Larger quantities may often be given with advantage, but it is always wise to begin with the smaller doses, and to use fresh fruit juice cautiously in the case of young babies, and babies who tend to diarrhoea especially. *At one year old* a tablespoonful should be given between the first and second feeds in the morning, and peach, apricot, greengage or pine-apple juice, also strained through muslin and made sweet if necessary, may now be given equally well as the above-mentioned juices.

At ten months, all babies, breast or bottle fed, should have the fresh fruit juice added to their diet, beginning with one teaspoonful at first if it has not been given before, and increasing as soon as possible to two teaspoonfuls twice a day. Babies who tend to be constipated, as they often do on cow's milk which must be heated, will often benefit from taking fresh fruit juice as above.

Introduction of Cow's Milk.—Whenever cow's milk is substituted for condensed milk, or patent food feeding, or begun in conjunction with breast-feeding, or after weaning, the mother must remember that the child's digestion *must be gradually educated to deal with it*. This may be accomplished in either of two ways.

1. By giving the *ordinary* cow's milk mixtures suitable for the child's age, *after peptonising the milk in these* (see *Recipe for Peptonised Milk*). For the first few days the milk must be peptonised for twenty minutes, and the time of peptonisation must then be lessened by five minutes each few days as the child digests the food well until the milk is not peptonised at all. The mixtures may be made and then peptonised, or the milk may be peptonised before the mixtures are made, whichever is most convenient; but the peptonisation must be done before the milk or mixtures are heated. Peptonisation is a very simple process, but the mother should not continue it for more than one month at most.

2. By introducing the cow's milk gradually, and giving at first *weak mixtures suitable for a much younger child*, and only gradually increasing the cow's milk strength according to the child's digestion. Since the child essentially needs more flesh-forming ingredient than can be supplied at first in such weak mixtures, this should, if possible, be made up by the addition of whey or egg-white. The quantity of diluent which will be required for twenty-four

hours when the child is entirely on the mixtures, is given at the end of each table (see below). If possible whey should be used; failing this the whites of one or two eggs may be shaken up in this measured quantity of barley water, according to the method given for the preparation of *Egg-white Water*—an ounce of barley water being omitted for each egg added, in the preparation.

The cow's-milk feeds should for the first two or three days replace *two* of the ordinary feeds; for the next day or two they should alternate with them, and then as rapidly as digestion warrants should replace them altogether. A table of suitable mixtures is given for each age below. The mother when beginning the use of cow's milk under any of the circumstances named above, should refer to *the table which corresponds with the child's age*. She should then take the child gradually through the mixtures given in this table. The last mixture is in most cases the correct one for the child's age, and the mother should then continue according to the ordinary tables of cow's-milk mixtures. In some cases she will have to increase the milk much more slowly, or in smaller amounts, than the above table indicates, her guide being the baby's digestion.

TABLES OF SUITABLE MIXTURES FOR INTRODUCTION OF COW'S MILK AT DIFFERENT AGES

AT ONE MONTH

On the First, Second, and Third Days

Cow's milk	.	.	.	.	3½	teaspoonfuls
Cream ¹	.	.	.	.	1	teaspoonful
Milk sugar	.	.	.	.	1½	teaspoonful
Diluent	.	.	.	.	2	ounces 6 teaspoonfuls
Total feed	.	.	.	.	3½	ounces

Note.—Total quantity of diluent required daily, 24 ounces 6 teaspoonfuls.

¹ If cream is not obtainable, this must be replaced in this and subsequent mixtures by an equal quantity of extra milk, and fat must be given additionally in another form, unless fat whey is used as the "diluent."

On the Fourth and Fifth Days

Cow's milk	.	.	.	.	4½	teaspoonfuls
Cream	.	.	.	.	1	teaspoonful
Milk sugar	.	.	.	.	1½	teaspoonful
Diluent	.	.	.	.	2 ounces	5 teaspoonfuls
Total feed	.	.	.	.	3½	ounces

Note.—Diluent required daily, 23 ounces 5 teaspoonfuls.

On the Sixth and Seventh Days

Cow's milk	.	.	.	.	6½	teaspoonfuls
Cream	.	.	.	.	1½	teaspoonful
Milk sugar	.	.	.	.	1½	teaspoonful
Diluent	.	.	.	.	2 ounces	2½ teaspoonfuls
Total feed	.	.	.	.	3½	ounces

Note.—Diluent required daily, 20 ounces 6 teaspoonfuls.

On the Eighth Day

Cow's milk	.	.	.	.	1	ounce
Cream	.	.	.	.	1½	teaspoonful
Milk sugar	.	.	.	.	1½	teaspoonful
Barley water	.	.	.	.	2 ounces	1 teaspoonful
Total feed	.	.	.	.	3½	ounces

Note.—Diluent required daily, 19 ounces.

AT TWO MONTHS

On the First, Second, and Third Days

Cow's milk	.	.	.	.	.	5½	teaspoonfuls
Cream	.	.	.	.	.	1½	teaspoonful
Milk sugar	.	.	.	.	.	1½	teaspoonful
Diluent	.	.	.	.	.	3	ounces
Total feed	.	.	.	.	.	4	ounces

Note.—Diluent required daily, 24 ounces.

On the Fourth and Fifth Days

Cow's milk	.	.	.	.	6½	teaspoonfuls
Cream	.	.	.	.	1½	teaspoonful
Milk sugar	.	.	.	.	1½	teaspoonful
Diluent	.	.	.	.	2 ounces	6½ teaspoonfuls
Total feed	.	.	.	.	4	ounces

Note.—Diluent required daily, 22½ ounces.

On the Sixth and Seventh Days

Cow's milk	.	.	.	.	7	teaspoonfuls
Cream	.	.	.	.	2	teaspoonfuls
Milk sugar	.	.	.	.	1½	teaspoonful
Diluent	.	.	.	.	2 ounces	5 teaspoonfuls
Total feed	.	.	.	.	4	ounces

Note.—Diluent required daily, 21½ ounces.

On the Eighth and Ninth Days

Cow's milk	.	.	.	.	1 ounce	1 teaspoonful
Cream	.	.	.	.	2	teaspoonfuls
Milk sugar	.	.	.	.	1½	teaspoonful
Diluent	.	.	.	.	2 ounces	4 teaspoonfuls
Total feed	.	.	.	.	4	ounces

Note.—Diluent required daily, 20 ounces.

On the Tenth Day

Cow's milk	.	.	.	.	1 ounce	2 teaspoonfuls
Cream	.	.	.	.	2	teaspoonfuls
Milk sugar	.	.	.	.	1½	teaspoonful
Barley water	.	.	.	.	2 ounces	3 teaspoonfuls
Total feed	.	.	.	.	4	ounces

Note.—Diluent required daily, 19 ounces.

AT THREE AND FOUR MONTHS

On the First, Second, and Third Days

Cow's milk	.	.	.	.	1 ounce
Cream	.	.	.	.	1½ teaspoonful
Milk sugar	.	.	.	.	2 teaspoonfuls
Diluent	.	.	.	.	3 ounces 4 teaspoonfuls
Total feed	.	.	.	.	5 ounces

Note.—Diluent required daily, 28 ounces.

On the Fourth and Fifth Days

Cow's milk	.	.	.	.	1 ounce 1½ teaspoonful
Cream	.	.	.	.	1½ teaspoonful
Milk sugar	.	.	.	.	2 teaspoonfuls
Diluent	.	.	.	.	3 ounces 3 teaspoonfuls
Total feed.	.	.	.	.	5 ounces

Note.—Diluent required daily, 27 ounces.

On the Sixth and Seventh Days

Cow's milk	.	.	.	.	1 ounce 3½ teaspoonfuls
Cream	.	.	.	.	2 teaspoonfuls
Milk sugar	.	.	.	.	2 teaspoonfuls
Diluent	.	.	.	.	3 ounces
Total feed	.	.	.	.	5 ounces

Note.—Diluent required daily, 24 ounces.

On the Eighth and Ninth Days

Cow's milk	.	.	.	.	1 ounce 6½ teaspoonfuls
Cream	.	.	.	.	2 teaspoonfuls
Milk sugar	.	.	.	.	2 teaspoonfuls
Diluent	.	.	.	.	2 ounces 6 teaspoonfuls
Total feed	.	.	.	.	5 ounces

Note.—Diluent required daily, 22 ounces.

On the Tenth Day

Cow's milk	.	.	.	.	2 ounces 2 teaspoonfuls
Cream	.	.	.	.	2 teaspoonfuls
Milk sugar	.	.	.	.	2 teaspoonfuls
Barley water	.	.	.	.	2 ounces 2 teaspoonfuls
Total feed	.	.	.	.	5 ounces

Note.—Diluent required daily, 18 ounces.

AT FIVE AND SIX MONTHS

On the First, Second, and Third Days

Cow's milk	.	.	.	.	1 ounce 3½ teaspoonfuls
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	5 ounces
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 35 ounces.

On the Fourth and Fifth Days

Cow's milk	.	.	.	.	1 ounce 6½ teaspoonfuls
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	4 ounces 4 teaspoonfuls
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 31½ ounces.

On the Sixth and Seventh Days

Cow's milk	.	.	.	.	2 ounces 1½ teaspoonful
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	4 ounces 1 teaspoonful
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 29 ounces.

On the Eighth and Ninth Days

Cow's milk	.	.	.	.	2 ounces 4½ teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	3 ounces 6½ teaspoonfuls
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 26 ounces 6 teaspoonfuls.

On the Tenth, Eleventh, and Twelfth Days

Cow's milk	.	.	.	.	3 ounces
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	3 ounces 2 teaspoonfuls
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 23 ounces 6 teaspoonfuls.

On the Thirteenth Day

Cow's milk	.	.	.	.	3 ounces 5 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Barley water	.	.	.	.	2 ounces 5 teaspoonfuls
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 18½ ounces.

AT SEVEN MONTHS

On the First, Second, and Third Days

Cow's milk	.	.	.	.	2 ounces
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	4 ounces 2½ teaspoonfuls
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 30 ounces.

On the Fourth and Fifth Days

Cow's milk	.	.	.	.	2 ounces 2 teaspoonfuls
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	4 ounces
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 28 ounces.

On the Sixth and Seventh Days

Cow's milk	.	.	.	.	2 ounces 5 teaspoonfuls
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	3 ounces 5½ teaspoonfuls
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 25 ounces 6 teaspoonfuls.

On the Eighth, Ninth, and Tenth Days

Cow's milk	.	.	.	.	3 ounces 1 teaspoonful
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	3 ounces 1 teaspoonful
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 22 ounces.

On the Eleventh, Twelfth, and Thirteenth Days

Cow's milk	.	.	.	.	3 ounces 5 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	2 ounces 5 teaspoonfuls
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 18½ ounces.

On the Fourteenth Day

Cow's milk	.	.	.	.	4 ounces 1 teaspoonful
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	2½ teaspoonfuls
Barley water	.	.	.	.	2 ounces 2 teaspoonfuls
Total feed	.	.	.	.	7 ounces

Note.—Diluent required daily, 16 ounces.

AT EIGHT MONTHS

On the First, Second, and Third Days

Cow's milk	.	.	.	.	2 ounces 3½ teaspoonfuls
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	5 ounces
Total feed	.	.	.	.	8 ounces

Note.—Diluent required daily, 40 ounces.

On the Fourth and Fifth Days

Cow's milk	.	.	.	.	2 ounces 6½ teaspoonfuls
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	4 ounces 4 teaspoonfuls
Total feed	.	.	.	.	8 ounces

Note.—Diluent required daily, 36 ounces.

On the Sixth, Seventh, and Eighth Days

Cow's milk	.	.	.	.	3 ounces 2½ teaspoonfuls
Cream	.	.	.	.	2½ teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	4 ounces 1 teaspoonful
Total feed	.	.	.	.	8 ounces

Note.—Diluent required daily, 33 ounces.

On the Ninth, Tenth, and Eleventh Days

Cow's milk	.	.	.	.	3 ounces 5 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	3 ounces 5 teaspoonfuls
Total feed	.	.	.	.	8 ounces

Note.—Diluent required daily, 29 ounces.

On the Twelfth, Thirteenth, and Fourteenth Days

Cow's milk	.	.	.	.	4 ounces 1 teaspoonful
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Cereal jelly	.	.	.	.	2 teaspoonfuls
Boiled water	.	.	.	.	3 ounces
Total feed	.	.	.	.	8 ounces

Note.—Diluent required daily, 18 ounces.

Thence continue to increase the milk strength by adding two or three teaspoonfuls or so of milk a day, omitting the same amount of water, until the correct strength for the child's age is reached. (See *Table of Single Feed Cow's-Milk Mixtures.*)

AT NINE TO TWELVE MONTHS

On the First, Second, and Third Days

Cow's milk	.	.	.	.	2 ounces 4½ teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	5 ounces 6 teaspoonfuls
Total feed	.	.	.	.	9 ounces

Note.—Diluent required daily, 51 ounces.

On the Fourth, Fifth, and Sixth Days

Cow's milk	.	.	.	.	3 ounces
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	5 ounces 2 teaspoonfuls
Total feed	.	.	.	.	9 ounces

Note.—Diluent required daily, 47 ounces 2 teaspoonfuls.

On the Seventh and Eighth Days

Cow's milk	.	.	.	.	3 ounces 3 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	5 ounces
Total feed	.	.	.	.	9 ounces

Note.—Diluent required daily, 45 ounces.

On the Ninth and Tenth Days

Cow's milk	.	.	.	.	3 ounces 6 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	4 ounces 4 teaspoonfuls
Total feed	.	.	.	.	9 ounces

Note.—Diluent required daily, 40½ ounces.

On the Eleventh, Twelfth, and Thirteenth Days

Cow's milk	.	.	.	.	4 ounces 2 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	4 ounces
Total feed	.	.	.	.	9 ounces

Note.—Diluent required daily, 36 ounces.

On the Fourteenth, Fifteenth, and Sixteenth Days

Cow's milk	.	.	.	.	4 ounces 6 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Diluent	.	.	.	.	3 ounces 4 teaspoonfuls
Total feed	.	.	.	.	9 ounces

Note.—Diluent required daily, $31\frac{1}{2}$ ounces.

On the Seventeenth Day

Cow's milk	.	.	.	.	5 ounces 2 teaspoonfuls
Cream	.	.	.	.	3 teaspoonfuls
Milk sugar	.	.	.	.	3 teaspoonfuls
Cereal jelly	.	.	.	.	3 teaspoonfuls
Boiled water	.	.	.	.	2 ounces 5 teaspoonfuls
Total feed	.	.	.	.	9 ounces

Note.—Diluent required daily, 16 ounces.

Thence continue to increase the milk strength by adding one or two teaspoonfuls of milk a day, omitting the same amount of water, until the correct strength for the child's age is reached. (See *Table of Single Feed Cow's-Milk Mixtures.*)

Supplementary Bottle Feeding.—When a daily bottle is to be given to the breast-fed baby at the age of two months it must replace a breast feed. The quantity given should be that suitable for its age. (See *Table of Feeding.*)

As regards the food to be given, it is *very advisable* to use cow's milk in order to gradually accustom the child to this, and if a little barley water can be prepared daily the child will be more likely to digest the milk well. Some of the morning's milk should be stood for five hours if the weather is cold, and sufficient of the top milk skimmed off to prepare the baby's food. The milk strength should be weak at first and then increased gradually, or else the ordinary milk mixtures suggested for the child's age should be given peptonised (see *Introduction of Cow's Milk at Two Months*), and then the ordinary cow's-milk mixtures suitable for its age according to the

tables should be given. Should cow's milk not suit the child, either fat whey and milk must be substituted ; or, failing this, Glaxo, or Nestlé's condensed milk, and the former is to be preferred, since it is richer and not so sweet. For suitable mixtures of these, see *Tables of Condensed Milk and Glaxo Mixtures*.

Feeding after Weaning.—If the baby has from the second month had a daily bottle containing cow's milk, there will be no trouble now in continuing the feeding suitable for the ninth to twelfth month, according to the tables of cow's-milk mixtures, which must now include the additional starchy food.

If the child has had nothing but breast milk, the feeding must be very carefully regulated. Very many breast-fed babies who have hitherto done well fall off and suffer from digestive troubles for the first time when they are weaned, because their feeding is not properly managed. Sometimes they are put on to a poor malted food, or other patent food prepared with water which entirely fails to nourish them, and they soon lose flesh and weight. Sometimes they are fed on thick and insufficiently cooked starchy gruels or "pap"; or on bread and milk, meal porridge or farinaceous puddings or other still more unsuitable foods, which not only upset their digestions but deprive them of the fat and flesh-building food they essentially require. Sometimes they are put straight on to undiluted cow's milk, which is often a cause of severe digestive upset. The only proper food for a baby at this age is cow's milk diluted, and thickened with a thoroughly well-cooked starchy food (see *Cereal Jellies*), which may well be alternated with a good malted food (see *Malted Foods*). If the baby has had no cow's milk, it is necessary to introduce it gradually (see *Introduction of Cow's Milk*), and a weak mixture, or ordinary mixture *peptonised*, of this, should replace each breast feed as this is dropped. If this method is not followed, *Benger's Food*, which I have found very useful for this purpose, should be given (see *Benger's Food Feeding*) for a few weeks, to lead the child gradually on to cow's milk and starchy food. If the feeding is managed on such lines as the above, the milk strength can usually be increased much more rapidly than in the case of a younger child.

Cream or other additional fat should essentially be given, and it will be very advisable to give yolk of egg two or three times a week (see *Yolk of Egg*), and fresh fruit juice should be given daily.

Two or three children's rusks (Zwieback), not soaked, or hard well baked stale bread or toast crusts, or "pulled bread," should be given the child to chew daily.

Difficult Feeding.—For mothers whose babies have difficulty with cow's milk because, as in some of the Colonies, suitable and digestible milk cannot be obtained, I would advise the following scheme:

For the first two months feed the child on a good brand of unsweetened condensed milk and barley water, with additional fat and fresh fruit juice; or much better, if it can be obtained, on Glaxo, which is an especially rich and perfectly pure dried milk, specially adapted for infant feeding, giving with it fresh fruit juice. Failing either of the above, use Nestlé's condensed milk, with the same additions as in the case of the unsweetened milk.

At the beginning of the third month begin to introduce carefully (see *Introduction of Cow's Milk*) cow's milk which has been scalded, diluted with barley water. If this after careful trial does not agree, put the child back again on to Glaxo; or failing this, Ideal unsweetened condensed milk, with the necessary additions in both cases.

Towards the end of the fourth month again try cow's milk, scalded and diluted with barley water, and gradually introduced. If the milk does not now agree, put the child on to Benger's Predigested Food (see *Benger's Food Feeding*) for a period of not more than at most three months.

Towards the end of the sixth month gradually introduce cow's milk scalded and diluted with barley water, which will usually be well taken now. If this appears to agree, but the child does not thrive well on it, such a *malted food* as Theinhardt's Infantina, or failing this, Hovis Food No. 2, should be given in three feeds in the day (see *Malted Foods*).

Tables of nuxtures of Condensed Milk, Glaxo, and Benger's Food suitable for different ages are given on pp. 181-189. It is very important for the mother to note that cow's milk must in all these cases be *gradually introduced*, and the best way to do this is explained fully on p. 166.

The above scheme is largely based on the successful results obtained in feeding children where unsuitable milk was the difficulty. It is intended chiefly to help mothers in the direction of

suggesting to them the safest and best way in which to ensure the child's better nutrition under such unfortunate circumstances.

If the child does not thrive or shows a tendency to vomiting, constipation, colic, or diarrhœa, I would strongly advise the mother to seek medical advice, since the special condition will often need special feeding. Also an inquiry into the milk supply and a change if necessary, or the doctor's prescription of citrate of soda to aid the digestion of cow's milk, or some slight alteration in or addition to the milk mixtures demanded by the particular case, will sometimes enable the baby to take cow's milk. *If ordinarily rich milk is obtainable*, the use of fat whey (p. 517), with milk added, will be very advisable and preferable to the use of preserved foods.

Cream and Whey Mixture.—Babics with delicate digestions will often be able to take a cream and whey mixture. The whey having been prepared (see *Recipe*) and heated, moderately thick cream should be added in the proportion of one to one and a half teaspoonful to each two ounces of whey, or, if thin cream is used, in double these quantities. Sugar should be added in the proportion of half a teaspoonful to each two ounces. Feeds of the size suitable to the child's age should be given. Such additions to the mixture as meat juice and bread jelly (for which the recipes are given in Chapter VIII. and the Appendix), Infantina, or Mellin's Food, &c., will sometimes be ordered, especially in cases of wasting.

In cold weather, if a good rich milk is obtainable, a cream and whey mixture may be prepared as follows:—Allow a pint and a half of fresh uncooked milk to stand in a *glass* jug or jar, with precautions for keeping it cool and covered, for five hours. Skim off the visible cream, and prepare the whey from the skimmed milk (about a pint will be obtained), and heat the whey. Add one level tablespoonful of milk sugar, or three teaspoonfuls of ordinary sugar, and the whole of the skimmed cream to the whey. The whites of one or two eggs may well be shaken up in the mixture (see *Recipe for Egg-white Water*) as the child grows stronger and hungrier.

Egg-white and Cream Mixture.—A substitute mixture may be prepared more simply by adding cream to *Egg-white Water* (see *Recipe*) in the proportion of one to one and a half teaspoonful of moderately thick cream (or double this quantity of thin cream) and one teaspoonful of sugar to every two ounces of egg-white

water. The mixture should be given in feeds suitable for the child's age, and warmed in the feeding bottle before use.

This mixture, and also the cream and whey mixture, will sometimes be useful for babies after severe attacks of diarrhoea and vomiting to lead them back on to cow's milk again. It is, I think, always advisable to scald the cream in such cases by method 3 (see *Scalding of Milk*). After using the mixture for a few days or so, half the cream may be replaced by milk, and then after a few days more a weak cow's-milk and barley-water mixture may often be given, and will be well taken, especially if citrate of soda is added to the feeds (see *Citrate of Soda*).

Humanised Milk.—It may be thought advisable to feed a young or delicate baby on a more or less "humanised milk," which, if the weather is cold or a refrigerator is available, can be prepared at home as follows:—Stand a pint of good rich new milk, as described under *Cream and Whey Mixture*. Skim off the cream. Prepare whey from the skimmed milk; about fifteen ounces of whey will probably be obtained. Heat the whey. Add to it seven ounces of fresh milk, the skimmed cream, and half an ounce of milk sugar. Scald the mixture, if possible in bottles. Add one teaspoonful of bicarbonate of soda solution (see this), for every ounce in the feed, to each bottle just before feeding. If the weather is warm it will be safer to buy the cream. One and a quarter ounce of moderately thick cream should be added to the whey (prepared from a pint of fresh milk) and the milk. The mixture should then be sweetened and scalded, and given as above. Fat whey (p. 517), with milk, forms the best and simplest "humanised milk."

TABLE OF CONDENSED MILK MIXTURES SUITABLE FOR DIFFERENT AGES

UNSWEETENED BRANDS

Third to Tenth Day

Condensed milk	.	.	.	1½	teaspoonful
Cream	.	.	.	½	teaspoonful
Milk sugar	.	.	.	½	teaspoonful
Boiled water	.	.	.	1 ounce	1 teaspoonful
Total feed	.	.	.	1½	ounce

Tenth to Twenty-eighth Day

Condensed milk	.	.	.	3	teaspoonfuls
Cream	.	.	.	$\frac{3}{4}$	teaspoonful
Milk sugar	.	.	.	1	teaspoonful
Boiled water	.	.	.	1 ounce 7	teaspoonfuls
Total feed	.	.	.	2 $\frac{1}{2}$	ounces

First to Second Month

Condensed milk	.	.	.	5 $\frac{1}{2}$	teaspoonfuls
Cream	.	.	.	1	teaspoonful
Milk sugar	.	.	.	1	teaspoonful
Boiled water	.	.	.	2 ounces 5	teaspoonfuls
Total feed	.	.	.	3 $\frac{1}{2}$	ounces

Second to Third Month

Condensed milk	.	.	.	1 ounce	
Cream	.	.	.	1	teaspoonful
Milk sugar	.	.	.	1	teaspoonful
Boiled water	.	.	.	2 ounces 6	teaspoonfuls
Total feed	.	.	.	4	ounces

Third to Fifth Month

Condensed milk	.	.	.	1 ounce 2	teaspoonfuls
Cream	.	.	.	1 $\frac{1}{2}$	teaspoonful
Milk sugar	.	.	.	1	teaspoonful
Boiled water	.	.	.	3 $\frac{1}{2}$ ounces	
Total feed	.	.	.	5	ounces

Fifth to Seventh Month

Condensed milk	.	.	.	2 ounces	
Cream	.	.	.	1	teaspoonful
Milk sugar	.	.	.	1 $\frac{1}{2}$	teaspoonful
Boiled water	.	.	.	4 ounces 6	teaspoonfuls
Total feed	.	.	.	7	ounces

Seventh to Eighth Month

Condensed milk	.	.	.	2 ounces 1 teaspoonful
Cream	.	.	.	1 teaspoonful
Milk sugar	.	.	.	1 teaspoonful
Boiled water	.	.	.	4 ounces 5 teaspoonfuls
Total feed	.	.	.	7 ounces

Eighth to Ninth Month

Condensed milk	.	.	.	2 ounces 5 teaspoonfuls
Milk sugar	.	.	.	1 teaspoonful
Cereal jelly	.	.	.	2 teaspoonfuls
Boiled water	.	.	.	5 ounces
Total feed	.	.	.	8 ounces

Ninth to Tenth Month

Condensed milk	.	.	.	.	3 ounces
Milk sugar	.	.	.	.	1 teaspoonful
Cereal jelly	.	.	.	.	3 teaspoonfuls
Boiled water	.	.	.	.	5½ ounces
Total feed	.	.	.	.	9 ounces

Tenth to Twelfth Month

Condensed milk	.	.	.	3 ounces
Milk sugar	.	.	.	1 teaspoonful
Cereal jelly	.	.	.	1 tablespoonful
Boiled water	.	.	.	5 ounces 3 teaspoonfuls
Total feed	.	.	.	9 ounces

If cream is not obtainable, additional fat should be given in another form, especially during the first three months of life (see *Additional Fat*).

A little fresh fruit juice should be given daily in conjunction with the above feeding (see *Fresh Fruit Juice*).

It is very important to note that unsweetened condensed milk readily decomposes after being opened, hence, *unless kept in ice, a fresh tin should be opened every day*, and even if ice is used no tin should be used after the second day.

TABLE OF CONDENSED MILK MIXTURES SUITABLE FOR DIFFERENT AGES

SWEETENED BRANDS

Note.—It is *essential* that sweetened condensed milk should be measured in a “medicine glass” (see Fig. 16) as follows:—Remove a small amount of condensed milk from the tin in a teaspoon, and allow this to trickle slowly from the tip of the teaspoon into the centre of the medicine glass until the glass is filled *evenly* up to the teaspoonful mark required, or midway between two teaspoonful marks if half a teaspoonful is required. Then rinse the glass with the diluent in order to remove all the milk. If the milk is measured in an ordinary domestic teaspoon, “one teaspoonful” will be anything from $1\frac{1}{2}$ to 4 teaspoonfuls. If such a medicine glass is not obtainable, the mixtures given below must be disregarded, and the condensed milk must be used in the proportion of one full domestic teaspoonful to every three ounces (six tablespoonfuls) of water, but it will be impossible to nourish the baby properly under these circumstances.

Third to Tenth Day

Condensed milk	.	.	.	1 teaspoonful
Cream	.	.	.	$\frac{1}{2}$ teaspoonful
Boiled water	.	.	.	1 ounce $2\frac{1}{2}$ teaspoonfuls
Total feed	.	.	.	$1\frac{1}{2}$ ounces

Tenth to Twenty-eighth Day

Condensed milk	.	.	.	$2\frac{1}{2}$ teaspoonfuls
Cream	.	.	.	1 teaspoonful
Boiled water	.	.	.	2 ounces 1 teaspoonful
Total feed	.	.	.	$2\frac{1}{2}$ ounces

First to Second Month

Condensed milk	.	.	.	.	$3\frac{1}{2}$ teaspoonfuls
Cream	.	.	.	.	$1\frac{1}{2}$ teaspoonful
Boiled water	.	.	.	.	3 ounces
Total feed	.	.	.	.	$3\frac{1}{2}$ ounces

Second to Third Month

Condensed milk	.	.	.	4	teaspoonfuls
Cream	.	.	.	2	teaspoonfuls
Boiled water	.	.	.	3	ounces 2 teaspoonfuls
Total feed	.	.	.	4	ounces

Third to Fifth Month

Condensed milk	.	.	.	.	5½	teaspoonfuls
Cream	.	.	.	.	2	teaspoonfuls
Boiled water	.	.	.	.	4	ounces
Total feed	.	.	.	.	5	ounces

Fifth to Eighth Month

Condensed milk	.	.	.	7½	teaspoonfuls
Cream	.	.	.	3	teaspoonfuls
Boiled water	.	.	.	5	ounces 5 teaspoonfuls
Total feed	.	.	.	7	ounces

Eighth to Ninth Month

Condensed milk	.	.	.	8½	teaspoonfuls
Cream	.	.	.	3	teaspoonfuls
Cereal jelly	.	.	.	2	teaspoonfuls
Boiled water	.	.	.	6	ounces 2 teaspoonfuls
Total feed	.	.	.	8	ounces

Ninth to Tenth Month

Condensed milk	.	.	.	.	10	teaspoonfuls
Cream	.	.	.	.	3½	teaspoonfuls
Cereal jelly	.	.	.	.	3	teaspoonfuls
Boiled water	.	.	.	.	7	ounces
Total feed	.	.	.	.	9	ounces

Tenth to Twelfth Month

Condensed milk	.	.	.	10	teaspoonfuls
Cream	.	.	.	4	teaspoonfuls
Cereal jelly	.	.	.	4	teaspoonfuls
Boiled water	.	.	.	6	ounces 6 teaspoonfuls
Total feed	.	.	.	9	ounces

It is very advisable to use fresh cream to supply the additional fat which is essential in the above mixtures. If this is not obtainable, the fat must be given in another form (see *Additional Fat*).

A little fresh fruit juice should be given daily while condensed milk is being used (see *Fresh Fruit Juice*).

Should the sugar which is inevitably in excess in the above mixture upset the baby's digestion, causing flatulence and frothy, irritating motions, if *unsweetened* condensed milk cannot be substituted, a little less condensed milk must be used in the mixtures; and this last remark must also apply if curds are seen in the motions, or if the baby shows a tendency to sickness or colic, unless the addition of lime water (see this) to the feeds rectifies the condition.

If the baby does not thrive well on the above mixtures, it is very advisable to add *Egg-white Mixture* (see *Recipe*) to the feeds during the first three months of life, and also in this way a fresh element can be introduced into the diet. In such case the same quantities of egg-white mixture should be prepared and used as are given for use with cow's milk on p. 156, omitting, however, in the case of the condensed milk mixtures the same amount of boiled water as is added of egg-white mixture, when making up the feeds according to the above table. After the first three months, egg-white water may be used (see *Egg-white Water*) to dilute the feeds instead of plain water.

It is not advisable to dilute condensed milk with barley water as is so often done, since the heat-forming ingredient (in the form of sugar) is already in excess in the mixtures, and to use barley water is to further increase this. It is also unnecessary, since condensed milk forms a softer curd than fresh cow's milk, and is hence usually easily digested.

It is important to remember when using even these sweetened brands of condensed milk that special precautions must be taken for keeping the milk cool, and that none which has been opened for more than at most three days should be used for infant feeding. Stale condensed milk is dangerous for the child, and is a not infrequent cause of illness, especially in hot weather. The opened tin should be kept cool and covered in the same way as the jug of cow's milk (see *Care of Milk after Heating*).

TABLE OF GLAXO MIXTURES

Third to Tenth Day

Glaxo	.	.	.	.	.	$\frac{3}{4}$ teaspoonful
Cream	.	.	.	.	.	$\frac{1}{2}$ teaspoonful
Sugar	.	.	.	.	.	$\frac{1}{2}$ teaspoonful
Hot water	.	.	.	.	.	1 ounce 2 teaspoonfuls
Total feed	.	.	.	.	.	1 $\frac{1}{2}$ ounce

Tenth to Twenty-eighth Day

Glaxo	.	.	.	.	.	1 $\frac{1}{2}$ teaspoonful
Cream	.	.	.	.	.	$\frac{1}{2}$ teaspoonful
Sugar	.	.	.	.	.	$\frac{3}{4}$ teaspoonful
Hot water	.	.	.	.	.	2 ounces 1 teaspoonful
Total feed	.	.	.	.	.	2 $\frac{1}{2}$ ounces

First to Second Month

Glaxo	.	.	.	.	.	3 teaspoonfuls
Cream	.	.	.	.	.	$\frac{3}{4}$ teaspoonful
Sugar	.	.	.	.	.	$\frac{1}{2}$ teaspoonful
Hot water	.	.	.	.	.	2 ounces 7 teaspoonfuls
Total feed	.	.	.	.	.	3 $\frac{1}{2}$ ounces

Second to Third Month

Glaxo	.	.	.	.	.	4 teaspoonfuls
Cream	.	.	.	.	.	$\frac{1}{2}$ teaspoonful
Sugar	.	.	.	.	.	$\frac{1}{2}$ teaspoonful
Hot water	.	.	.	.	.	3 ounces 3 teaspoonfuls
Total feed	.	.	.	.	.	4 ounces

Third to Fifth Month

Glaxo	.	.	.	.	.	5 teaspoonfuls
Cream	.	.	.	.	.	$\frac{1}{2}$ teaspoonful
Sugar	.	.	.	.	.	$\frac{1}{2}$ teaspoonful
Hot water	.	.	.	.	.	4 ounces 2 teaspoonfuls
Total feed	.	.	.	.	.	5 ounces

Fifth to Seventh Month

Glaxo	7½ teaspoonfuls
Hot water	6 ounces 1 teaspoonful
Total feed	7 ounces

Seventh to Eighth Month

Glaxo	8 teaspoonfuls
Hot water	6 ounces
Total feed	7 ounces

Eighth to Ninth Month

Glaxo	9 teaspoonfuls
Cereal jelly	2 teaspoonfuls
Hot water	6 ounces 5 teaspoonfuls
Total feed	8 ounces

Ninth to Tenth Month

Glaxo	10 teaspoonfuls
Cereal jelly	3 teaspoonfuls
Hot water	7 ounces 3 teaspoonfuls
Total feed	9 ounces

Tenth to Twelfth Month

Glaxo	10 teaspoonfuls
Cereal jelly	4 teaspoonfuls
Hot water	7 ounces 2 teaspoonfuls
Total feed	9 ounces

Even teaspoonfuls of Glaxo should be taken in all cases, and ordinary white sugar may be used. If the mother finds, during the first six months, that the baby does not thrive and put on weight very well, nor seem to be contented, she should try increasing the quantity of Glaxo sed in the feeds, carefully watching the baby's digestion. If cream is not obtainable, the fat should be given in another form (see *Additional Fat*), and yolk of egg (see this) may very advisably be given, two or three times a week. Fresh fruit juice must be given as an essential part of the diet during the whole time of the feeding (see *Fresh Fruit Juice*).

BENGER'S FOOD FEEDING AFTER THE FOURTH MONTH

The Benger's food must be prepared with milk and water, and must be stood after mixing for a certain definite length of time. To prepare a pint of food, two *level* tablespoonfuls of Benger's food should be used, and the pint of milk and water should be made up as follows :—

During the First Three Days of the Feeding¹

Cow's milk	8 ounces
Water	12 ounces

During the Fourth Day to Twenty-first Day

Cow's milk	10 ounces
Water	10 ounces

During the Third, Fourth, Fifth and Sixth Weeks

Cow's milk	11½ ounces
Water	8½ ounces

During the Seventh and Eighth Weeks

Cow's milk	13½ ounces
Water	6½ ounces

The milk and water having been measured, put these into a saucepan. Mix the two level tablespoonfuls of Benger's food to a smooth paste with just sufficient of the cold milk and water in a good-sized basin. Heat the milk and water, and when it boils, pour it on to the Benger's food, stirring well all the time. Stand the food for the time indicated below. Then place it in the saucepan and heat it up and boil for one minute. The mixture should be given in feeds of the size suitable for the child's age (see *Table of Feeding*).

¹ If the child's digestion has been delicate it may be advisable to continue using this mixture for two or three weeks.

Time of Predigestion.—During the first week stand the mixture for 45 minutes before boiling.

During the second week stand it for 40 minutes.

During the third week stand it for 35 minutes.

During the fourth week stand it for 30 minutes.

During the fifth week stand it for 25 minutes.

During the sixth week stand it for 20 minutes.

During the seventh week stand it for 15 minutes.

During the eighth week stand it for 10 minutes.

Then give the child the ordinary cow's-milk and barley-water mixture suitable for the seventh to eighth month (see *Tables of Cow's-Milk Mixtures*).

The Bengers'-food mixtures above are very deficient in fat, and therefore this must be given additionally (see *Additional Fat*); and fresh fruit juice must be given as an essential part of the diet during the whole time of the feeding (see *Fresh Fruit Juice*).

If the mother finds as she increases the milk in the above mixtures that the child does not digest them well, she must keep to the weaker mixtures, which suit the child, for a longer period, and increase more slowly; or better, stand the mixture for a longer period than that suggested for the later weeks; and in such cases she may continue the Bengers'-food feeding for another month.¹

When the above feeding is adopted for the baby at the time of weaning, at the eighth or ninth month, the cow's milk should be increased as rapidly as the child's digestion warrants, until it is taking the mixture suitable for its age according to the cow's-milk tables.

Recapitulation of the important points to be borne in mind in Bottle-Feeding

1. The bottles and teats must be cleansed immediately after use and kept free from sour milk, and all vessels used for cooking or

¹ If the mother prefers to prepare the baby's feeds as required, she should use the milk mixtures suitable for the child's age recommended under *Introduction of Cow's Milk*, using boiled water as diluent and increasing the milk strength as rapidly as possible. She should in such case use the Bengers' food in the proportion of a small half teaspoonful (filled level) for every ounce in the feed; and prepare and stand each mixture as above.

standing the milk must be scalded before use, and should be kept entirely for the baby's use.

2. The proportion and nature of each necessary constituent in the child's diet must, as far as possible, imitate those of breast milk, and no excess of one ingredient will make up for the deficiency of another.

3. Each feed must consist of a measured quantity within certain definite limits, and be given at regular intervals.

4. Condensed-milk and patent-food feeding must never be adopted unless careful fresh cow's-milk feeding absolutely disagrees or is attended by a definite risk. If condensed milk is used, an *unsweetened* brand is to be preferred. Patent foods must be selected *according to the child's age*.

5. Condensed-milk feeding must always be supplemented by fat, and a little fresh fruit juice should be given daily to counteract the dangers of scurvy and rickets. Since sweetened condensed milk sometimes tends to produce a laxative effect, and fresh fruit juice has also this tendency, it should be given in small amount so as not to set up diarrhoea. Patent-food feeding must always be supplemented by fat and fresh fruit juice for the same reasons as in the case of condensed milk.

6. Barley water must only be given *thin and weak* to the baby under six months, and starchy foods during this period only when *predigested* and in small quantity, when there is special indication for their use.

7. *In Cow's-Milk Feeding* :—

(a) The cows must be declared free from tuberculosis and regularly examined by a veterinary surgeon.

(b) They must be suitably fed.

(c) The milk must be obtained twice a day from two separate milkings; milked cleanly, and cooled at the dairy, and placed immediately into sterilised *bottles*, sealed, and conveyed thus, if possible, direct to the consumer within six hours of milking, with precautions for keeping it cool.

(d) In hot weather the milk should be scalded immediately on arrival. In cold weather the milk may be stood after arrival for five hours, with precautions for keeping it cool and covered, and the upper half (top milk) used for preparing the baby's food. All milk which is bought should be heated before use, and it is advisable

that the heating should be done at home and not at the dairy. The milk should then be cooled quickly, and kept cool and covered till used.

(e) If rich top milk is not available for preparing the baby's food, additional fat must be given.

(f) If the milk is boiled, that is *scalded* or *sterilised*, a little fresh fruit juice should be given daily.

(g) The child's *digestion*, *motions*, and *weight* must be carefully watched, and the milk strength increased or decreased according to the state of these.

8. When cow's-milk feeding is first begun after condensed-milk feeding, patent-food feeding, or breast feeding, a weaker mixture than that suitable for the child's age must be given, and this only gradually increased in strength; or else the milk must at first be given peptonised.

9. All sudden attacks of diarrhœa and vomiting require that all milk should be temporarily stopped, and white of egg diluted with barley water, or white of egg diluted with plain water, or plain barley water substituted for the feeds.

10. Fresh fruit juice sweetened and strained through muslin should be given to all babies from the tenth month onwards.

11. The baby should be weaned from the bottle and fed with a cup and spoon by the fourteenth month; and breast-fed babies do quite as well fed with a spoon from the time they are first weaned.

12. Starchy food must be added to the child's feeds at the eighth to ninth month, and should consist, by preference, of oat, barley, wheat or bread jelly, which may be alternated with a malted food, such as Theinhardt's Infantina or Hovis Food No. 2. Small quantities must be given in all cases, and the starchy food which is not malted must receive thorough cooking.

CHAPTER VIII

FEEDING AFTER THE FIRST YEAR

THE feeding during the second year of the child's life needs very careful regulation. This is the transition period during which the child is exchanging the monotonous diet of infancy for the necessarily varied diet of an older child, and it is therefore necessary to educate both its digestion and taste. The diet must be enlarged by suitable and essential additions at suitable times; and all foods which are new to the child should be introduced gradually by trying a small amount at first. Patience and steady effort will be necessary in many cases to get the child who is accustomed only to milk to take them readily, and sometimes a little sweetening or a judicious sprinkling of "hundreds and thousands" will effect this result.

Milk in one form or another will form a considerable portion of the diet, but the child must not be kept entirely on this, and must essentially have plenty of fat and more solid flesh-forming foods, and, while sufficient starchy food must be given, the common mistake must not be made of giving this and milk as the chief part of the diet during this second year. The fat is best given in the form of cream or butter, and eggs; and meat in a form adapted to the child's age and good meat juice should essentially be given.

It is very advisable to add Plasmon, which is a concentrated food prepared from the flesh-forming ingredients of milk, to certain of the child's foods daily. Since only a definite measured quantity of Plasmon must be used, and this must be boiled, instructions are given (see *Recipes*) for making a "Plasmon jelly" to be added to foods as required, and the suitable quantities to add are given in the recipe, and also in the suggested diets.

The child's meals must be given as punctually, at definite hours as during infancy, and in the intervals between them no biscuits or sweets should be allowed.

Drinks of boiled water must, however, be given between meals,

as the child essentially needs these, and an insufficient quantity of fluid, other than broths and milk, &c., is a not infrequent cause of constipation. The child's food must be prepared especially for it, according to the diets suggested, for which all the essential recipes are given at the end of the chapter. This may mean more trouble in some cases ; but it is essential, for adult diet cannot be modified to serve the purpose, and the child must be allowed no tit-bits from the general table. On this account it is better, if it is possible, for it to have its meals at a separate table until the seventh year. The child should be taught to eat slowly, though not allowed to dawdle over and play with its food ; and the habit of efficient mastication, or *chewing*, should be inculcated from the very beginning, that is long before we can rely upon it, and while we are still carefully cutting up and preparing all its food. Hard food should be given daily in the form of a few rusks, toast or stale bread crusts, or "pulled bread," or Huntley & Palmer's breakfast biscuits, Hovis unsweetened, or Graham or Plasmon biscuits, to encourage chewing movements and aid in the preservation of the teeth.

The child should be quite weaned from the bottle by the fifteenth month, except for night feeds, which it will often be convenient to give in this way during the second year, and in illness the child will often find comfort in, and be induced to take its food better from the old friend.

Twelfth to Thirteenth Month.—The child should have five meals daily. It should have at three meals warm milk with oat, barley or wheat jelly (see *Recipes*). One of these meals should be preceded by fresh cooked beef or mutton juice (see *Recipes*), or the juice which runs out of the joint ; one teaspoonful should be given at first, and this increased as the child digests it well to one or two tablespoonfuls at a feed. This may be given with the milk, or slightly sweetened if the child prefers it so. At a fourth meal the child should have good chicken, veal or mutton broth (see *Recipes*), not soup, with a well-beaten raw egg stirred into it (see *Recipe for Broth Flip*). Half the egg should be given at first, and as soon as it is seen that the child digests it well the whole should be given. The fifth meal may advisably consist of warm milk containing a malted food. A dessertspoonful or more of cream should, if possible, be added to the cups of milk and cereal jelly. If cream is not obtainable, the necessary fat should be given in the form of good

butter, *melted* immediately before use in the *hot* milk and jelly. Half a teaspoonful should be given at first in the feed if the child has not had butter fat before, and this should be increased gradually to one or two teaspoonfuls well stirred into the warm feed if the child digests it well. The butter (2 oz. to the pint) may conveniently be added (at the last) when preparing the cereal jelly. The child should be given fresh fruit juice (see *Fresh Fruit Juice*) between the first and second meal in the day. It should be given daily a few toast crusts or stale bread crusts, or by preference children's hard German rusks (Zwieback) or pieces of "pulled bread" to nibble and chew.

Suggested Diet.

7 A.M. A breakfast-cupful of warm milk containing two to four tablespoonfuls of oat jelly, and a dessertspoonful of cream, or a teaspoonful or so of melted butter.

9 A.M. The juice of an orange, sweetened and strained through muslin, or a tablespoonful of one of the fresh fruit juices mentioned on p. 165.

11 A.M. A tablespoonful or so of fresh cooked beef or mutton juice, or the juice which runs out of the joint. A breakfast-cup of warm milk containing two to four tablespoonfuls of oat, barley or wheat jelly and a dessertspoonful of cream or a teaspoonful or so of melted butter. Occasionally the milk may be thickened with two or three teaspoonfuls of florador (finest grained), or corn-flour, which should both be *boiled* in the milk for half-an-hour.

3 P.M. A breakfast-cup of thickened veal, chicken or mutton broth, containing a well-beaten raw egg. A couple of rusks or stale bread crusts or toast crusts, or "pulled bread."

7 P.M. A breakfast-cup of warm milk containing two to four tablespoonfuls of oat, barley or wheat jelly and a dessertspoonful of cream or a teaspoonful or so of melted butter.

10 P.M. A breakfast-cup of warm milk containing a tablespoonful of Allenbury's malted food, or Mellin's food.

Thirteenth to Fifteenth Month.—The child should have five meals daily. Scraped meat pulp (see *Recipes*) should be given now every other day, moistened, with stale bread crumbs; and on the intermediate day a lightly poached or boiled egg with stale bread crumbs. One teaspoonful of meat pulp should be given at first, and

this increased as quickly as possible to a tablespoonful or so at a feed. Plasmon biscuits, Hovis and Graham biscuits, and Huntley and Palmer's breakfast biscuits may be given in addition to rusks and crusts, but sponge fingers, shortbread fingers, and similar sweet soft biscuits should be avoided. Bread and milk (see *Recipe*), porridge prepared from *fine* oatmeal, florador and milk, and custard pudding may all be given.

Suggested Diet. First Day.

7 A.M. A breakfast-cup of warm milk containing two to four good tablespoonfuls of oat, wheat or barley jelly and a dessertspoonful of cream or a teaspoonful or so of melted butter.

9 A.M. The juice of an orange or a tablespoonful of one of the fruit juices mentioned on p. 165.

11 A.M. One or two tablespoonfuls of scraped beef or mutton pulp mixed with one or two tablespoonfuls of stale bread crumbs and a couple of tablespoonfuls of fresh cooked beef or mutton juice, or the juice which runs out of the joint. A breakfast-cup of warm milk.

Either a dessertspoonful of cream should be added to the cup of milk or one or two teaspoonfuls of melted butter should be mixed with the scraped meat and bread crumbs.

3 P.M. A breakfast-cup of warm milk containing two to four good tablespoonfuls of oat, wheat or barley jelly and a dessertspoonful of cream or a teaspoonful or two of melted butter, *or* a saucerful of fine oatmeal porridge and milk, or of florador food and milk, with a drink of warm milk.

7 P.M. A breakfast-cup of warm sweetened milk containing a well-beaten raw egg, *or* a cup custard pudding. A couple of Hovis, Graham or Plasmon biscuits or rusks.

10.30 P.M. A breakfast-cup of warm milk containing a tablespoonful of Allenbury's malted food, or of Mellin's food.

Second Day.

7 A.M. A breakfast-cup of warm milk containing two to four tablespoonfuls of oat jelly and a dessertspoonful of cream or a teaspoonful or so of melted butter.

9 A.M. The juice of an orange, or a tablespoonful of one of the fresh fruit juices mentioned on p. 165.

11 A.M. A lightly poached or boiled egg mixed with a couple of tablespoonfuls of stale bread crumbs. A breakfast-cup of warm milk.

3 P.M. A breakfast-cup of good thickened mutton, veal or chicken broth containing from one to two tablespoonfuls of Plasmon jelly and a dessertspoonful of cream or a teaspoonful or so of melted butter. Two or three Plasmon or Graham biscuits or rusks.

7 P.M. A breakfast-cup of warm milk containing two to four tablespoonfuls of oat, barley or wheat jelly and a dessertspoonful of cream or a teaspoonful or so of melted butter, *or* a basin of bread and milk and a drink of warm milk.

10.30 P.M. A breakfast-cup of warm milk containing a tablespoonful of Allenbury's malted food or Mellin's food.

Fifteenth to Eighteenth Month.—The child should have four meals daily, and only a fifth if awake late in the evening. A cup custard pudding or milk pudding made with an egg should be given at first on the day when an egg is not given, but most children can soon take two eggs in the day with advantage. Farina,¹ a nutritious and digestible fine whole wheat preparation which must be boiled for *one hour*, or Marshall's farola² (medium grained), a similar preparation which must also be boiled for *one hour*, should be given once a day. Maizena or corn-flour or ground rice are not to be recommended, since they have little nutritive value as compared to fine florador,² a good substitute, and the other cereals mentioned, and they are constipating, but they may be given occasionally for the sake of variety and must be boiled for *half-an-hour*. Well stewed and carefully strained apple, or the mashed pulp of a baked apple or so, or a couple of tablespoonfuls of prune pulp (see *Recipes*) should be given daily; and *thin* slices of *stale* bread and butter, with caution, teaching the child to chew them up.

Suggested Diet. First Day.

7 A.M. A breakfast-cup of warm milk containing two to four good tablespoonfuls of oat jelly and a tablespoonful of cream or one or two teaspoonfuls of melted butter. A slice or two of thin stale bread and butter.

¹ Hecker's farina, obtainable from Robert Jackson & Co., American Grocers, 171, Piccadilly, London.

² Obtainable from the Army and Navy Stores, and Whiteley's, London.

9 A.M. The juice of an orange or a tablespoonful of one of the fresh fruit juices mentioned on p. 165.

11 A.M. A couple of tablespoonfuls of scraped meat pulp mixed with the same quantity of stale bread crumbs, and two or three tablespoonfuls of fresh cooked meat juice or the juice which runs out of the joint. A couple of tablespoonfuls of prune pulp or of stewed apple or the mashed pulp of a baked apple or so, mixed with a tablespoonful of Plasmon jelly. A breakfast-cupful of warm milk.

Either a dessertspoonful of cream should be added to the cup of milk, or stewed fruit, or a teaspoonful or two of melted butter should be mixed with the meat pulp.

3 P.M. A teacupful of good mutton, veal or chicken broth containing a tablespoonful of Plasmon jelly, with stale bread broken into it. A cup custard pudding.

6 P.M. A saucerful of farina or farola or florador or barley or bread pudding made with an egg (see *Recipes*), containing a tablespoonful of Plasmon jelly. A teacupful of warm milk and a couple of rusks or suitable biscuits.

Second Day.

7 A.M. A breakfast-cup of warm milk containing two to four good tablespoonfuls of oat jelly and a tablespoonful of cream or one or two teaspoonfuls of melted butter. A slice or two of thin stale bread and butter.

9 A.M. The juice of an orange or a tablespoonful of one of the fresh fruit juices mentioned on p. 165.

11 A.M. A lightly poached or boiled egg mixed with a couple of tablespoonfuls of stale bread crumbs. A couple of tablespoonfuls of prune pulp or of stewed apple, or the mashed pulp of a baked apple or so mixed with a tablespoonful of Plasmon jelly. A breakfast-cup of warm milk.

3 P.M. A saucerful of farina and milk or farola and milk or fine oatmeal porridge and milk, or florador or ground rice and milk or corn-flour and milk, each with a dessertspoonful of cream or a teaspoonful or so of melted butter added, and a tablespoonful of Plasmon jelly. A teacupful of warm milk.

6 P.M. A breakfast-cup of mutton, veal or chicken broth containing a well-beaten egg and a tablespoonful of Plasmon jelly. Two or three Hovis or Graham or Plasmon biscuits or rusks.

Eighteen Months to Two Years.—The child should have four meals daily. Porridge prepared from medium meals may now be given, and either cream or butter should be given with it, as well as milk. It is of first importance that the porridge should be thoroughly well cooked and that it should be varied. If a double milk saucepan is used and the porridge is made on the day before use, the first condition will be ensured,¹ and local grocers will be led to order a greater variety of cereals from their many makers and from larger stores if there is a demand for them. Oatmeal, or Plasmon oats, or the rolled oats preparations, such as Quaker oats, should be given. A *medium* oatmeal should be selected (never at any time a coarse oatmeal), and should be boiled for three hours at least, and may with advantage be boiled for several hours longer—in fact, cannot be boiled too long. Quaker oats should be boiled for *one and a half hours at least*. Plasmon oats, which should be boiled for *half-an-hour at least*, are very nutritious and are easily prepared. Maize² (Indian corn, mealie corn), meal, which is largely used in America and the Colonies, in several Continental countries and in Ireland, is obtainable in England, and should be more widely used than it is to vary oatmeal. It should be boiled for *three hours or longer*. Hominy,² a form of maize meal, much liked by children, should be soaked overnight in water added *boiling*; and boiled for *three hours* at least. “Cream of Wheat”² and “Wheatena,” in addition to farina or farola already mentioned, are very suitable wheat preparations for children’s porridge. They should all be boiled for *one hour*. Shredded wheat preparations and coarse whole grain cereals, such as “cracked” (or “crushed”) wheat, and the split maize preparation known in America as “samp” and in South Africa as “stamped mealies,” should never be given to children. Rice, preferably “flaked,” well boiled in the milk till *quite soft*, may be given now, or milky rice pudding (see *Recipe*).

Soup may replace broth now, but it must not be highly seasoned, and should be, like gravies, carefully strained and *well skimmed of*

¹ A little superintendence and personal inspection is advisable to ensure the carrying out of these instructions, since servants have a strong predilection for “five minutes porridges,” and similar cereal packet instructions for quickly and easily prepared foods.

² Obtainable from the Army and Navy Stores, and Whiteley’s, London, and Robert Jackson & Co., Piccadilly.

fat. Good thick vegetable soups strained, which should be made with fresh vegetables, or dried peas, haricot beans and lentils, and may be thickened with rice or potato, are much to be recommended. Mashed baked banana (see *Recipes*) may very advisably be given as well as prune and apple pulp. Pounded white chicken or chicken cream, or pounded fresh tongue (see *Recipes*), may advantageously be given alternately with the red meat pulp. The pounding may be most easily done with a pestle and mortar, or, failing this, after mincing with a knife and fork, the chicken, moistened with a little milk, or tongue, may be well mashed with the back of a wooden spoon in a basin. One or two tablespoonfuls of potato mashed with a little butter, and a heaped tablespoonful of one of the following vegetables, should now be given daily. The flour of a *baked* potato is to be preferred, well scraped from the skin, as here it is rich in the salts the child needs. Soft mashed cauliflower or Brussels sprouts or well-boiled celery may be given; spinach, with all stalks carefully removed, that is, well boiled, beaten and strained through a sieve; mashed pumpkin and vegetable marrow or asparagus tops. All vegetables are much more nutritious for children, and indeed for adults, if cooked in a steamer until they are quite soft, and potatoes if steamed in their jackets retain a great deal of nutritious material, which if they are peeled is lost.

Ripe bananas, soft juicy peaches or apricots, ripe melon or *sweet* grapes may be given now, cautiously at first, with all skins, stones and seeds removed. Bananas, which are excellent for children *cooked*, should, when given raw, be at first mashed, and, when given whole, the child should be watched to see that he does not bolt large pieces, since bananas consist of starch and may be, especially in the case of a delicate child, very indigestible if eaten in this way.

Suggested Diet. First Day.

7.30 A.M. Porridge and milk with cream or butter, and (unless Plasmon oats are given) from one to two tablespoonfuls of Plasmon jelly. A couple of slices of thin stale bread and butter. A breakfast-cupful of warm milk.

9 A.M. One or two ripe bananas, soft juicy peaches or apricots, ripe melon or sweet grapes.

11 A.M. A cupful of broth or soup with a little stale bread

broken into it and a tablespoonful of Plasmon jelly. The mashed pulp of a baked apple or so, or a mashed baked banana, or a couple of tablespoonfuls of well-stewed strained apple, or of prune pulp with milk or cream. A couple of rusks or suitable biscuits.

2.30 P.M. One to two tablespoonfuls of pounded chicken or pounded tongue with a couple of tablespoonfuls of potato mashed with a little butter, and a heaped tablespoonful of soft mashed vegetable, selected from the foregoing list. A saucerful of milky rice pudding or farina or farola or ground rice or corn-flour or florador or barley pudding each made with an egg.

6 P.M. A lightly boiled egg and a couple of slices of thin crisp toast and butter. A breakfast-cup of warm milk containing a dessertspoonful of Plasmon jelly.

A cup of milk may be given if the child is awake at ten o'clock.

Second Day.

7.30 A.M. A lightly boiled egg with two slices of thin stale bread and butter. A breakfast-cup of warm milk with a dessertspoonful of Plasmon jelly.

9 A.M. Fresh fruit as above.

11 A.M. A cupful of broth or soup with a little stale bread broken into it and a tablespoonful of Plasmon jelly. The mashed pulp of a baked apple, or a mashed baked banana, or a couple of tablespoonfuls of stewed apple or of prune pulp, with milk or cream. A couple of rusks or suitable biscuits.

2.30 P.M. One to two tablespoonfuls of meat pulp with a couple of tablespoonfuls of potato mashed with a little butter, and a heaped tablespoonful of soft mashed vegetable selected from the foregoing list. A saucerful of junket or a cup custard.

6 P.M. A breakfast-cup of farina and milk, or farola and milk, or bread and milk, or florador, or ground rice, or corn-flour and milk, each with from one to two tablespoonfuls of Plasmon jelly added. A couple of rusks or suitable biscuits.

A cup of milk may be given if the child is awake at ten o'clock.

Two to Three Years.—The child should have three principal meals daily; but a cup of milk or cocoa or soup with biscuits or rusks or a sponge-cake, or a little fruit and bread and butter, may be given midway between the midday meal and supper if the child

seems to need it. The meat and chicken may now be minced with a knife and fork, carefully removing all hard bits and avoiding lumps of fat. Fish may be given, baked or boiled or steamed, but never fried, at a second meal, but it should never replace meat or chicken. All the white flat fish, such as sole, plaice, halibut and turbot, are, with whiting, suitable; cod, hake, and fresh haddock should be given at first with more caution. Any smoked or salted fish, and such rich fish as herring, mackerel, salmon, smelts, whitebait, &c., and shell-fish, should never be given.

The farinaceous puddings, such as sago, tapioca, macaroni, vermicelli and semolina, well cooked according to recipes, may now be given once a day with the meat meal. Raw *ripe* fruits, such as oranges, strawberries, apples, pears, plums, and greengages, all carefully prepared, with all skins, seeds, stones, pith and hard bits removed, may now be given in addition to those fruits before mentioned. Apples and pears especially must be *perfectly ripe*, and the child taught to chew them up thoroughly.¹

To the biscuits may be added Huntley & Palmer's Osborne biscuits, Albert, Marie, cream crackers, petit beurre, and cracknels, but sweet sponge fingers, shortbread fingers, and other similar sweet rich fancy biscuits are not to be recommended as biscuits, though a sponge-cake will often be appreciated.

Suggested Diet.—A cup of milk should be given if the child wakes between six and seven in the morning. If the morning's milk does not arrive in time for this, condensed milk or Glaxo should be given, as the child should never have milk which has been kept overnight, unless boiled and kept in a refrigerator.

First Day.

8 A.M. A saucerful of porridge and milk with cream or butter. A cup of milk, or Plasmon cocoa or chocolate,² each made with milk.

¹ In the case of children with more delicate digestions, especially those who have been subject to stomach and bowel disorder, apples and pears should not be given at this age, nor green peas, which unless quite young should never be given to any child. Oatmeal porridge prepared from medium meal or rolled oat preparations is better deferred in such cases until after the second year.

² The G.B. soluble chocolate, vanilla flavoured, which can be added directly to the hot milk and does not require boiling, is much to be recommended for children. This is obtainable from Guerin Boutron, 109, Bond Street, or from the Army and Navy Stores, or Whiteley's, London.

A couple of tablespoonfuls of fish mashed with a little butter and moistened with milk. A couple of slices of thin crisp toast and butter, or of bread and butter. A piece of stale bread soaked in bacon fat will be good for and appreciated by the child.

9 to 10 A.M. Raw ripe fruit selected from the foregoing lists.

12.30 P.M. Soup, or pea or lentil purée. Minced meat or chicken with mashed potato and a suitable vegetable. A saucerful of farinaceous milk pudding or mould.

5.30 P.M. A lightly boiled egg with a couple of slices of thin crisp toast and butter. A couple of tablespoonfuls of prune or apple pulp, or mashed baked banana, each with milk or cream and a tablespoonful of Plasmon jelly. A teacup of warm milk.

Second Day.

8 A.M. A saucerful of porridge and milk with cream or butter. A cup of milk, or Plasmon cocoa or chocolate, each made with milk. A lightly boiled egg with a couple of slices of thin stale bread and butter or thin crisp toast and butter.

9 to 10 A.M. Fresh fruit as above.

12.30 P.M. Soup, or pea or lentil purée. Minced meat or chicken or fresh tongue with mashed potato and a suitable vegetable. A saucerful of junket or a cup custard.

5.30 P.M. A saucerful of farina or farola and milk, or bread and milk, or soft flaked rice and milk, or flaxseed or corn-flour or ground rice and milk, with a couple of tablespoonfuls of Plasmon jelly added in each case. A couple of tablespoonfuls of prune pulp or stewed or baked apple pulp or mashed baked banana with milk or cream. A teacup of warm milk.

Three to Six Years.—The child should have three meals daily. Omelette or scrambled egg may be given now, and as children like change no less than adults, and take their food and derive benefit from it to a much greater extent if variety is allowed, the eggs should also be given variously boiled, poached, or baked in a fireproof china "egg-poacher," with a little butter in the oven, but should not be fried. Minced fat bacon may with advantage be given now, and bread soaked in bacon fat as before. Well-cooked young beetroots (warm), *young* turnips, and parsnips, and *young* carrots, well-boiled young green peas and French beans, carefully prepared as regards "stringing," and the soft hearts of well-boiled

Spanish onions, may be added to the list of suitable vegetables. All these vegetables must be so well cooked as to be quite soft, and *should be mashed with a fork before they are given*. A little apple tart with a light plain short crust (not puff paste), or simple trifle prepared without almonds, may be given occasionally. Well-cooked soft stewed fruits, such as apples, pears, quinces, apricots, peaches, prunes, and rhubarb should be given. The tough skins or seeds of other fruits, such as currants, plums, cherries, gooseberries, blackberries, and guavas render them less advisable at this age, unless put through a sieve (see *Fruit Moulds*). Light *well-steamed* batters and well-steamed plain suet puddings or "rolls," or these made with suitable fruits or jam, are useful. Good jams and jellies and honey, maple or golden syrup, should be given in due amount with breakfast or supper, but not on both occasions.

Suggested Diet. First Day.

Breakfast, 8 A.M. Porridge and milk with cream or butter. Minced fat bacon or white fish and a slice of bread soaked in bacon fat. A cup of Plasmon cocoa or chocolate each made with milk.

9 to 10 A.M. Fresh fruit.

Dinner, 1 P.M. Soup, or pea or lentil purée. Minced butcher meat or chicken, or fresh tongue with potato and vegetable. Farinaceous milk pudding, or mould, or steamed suet pudding, or occasionally a little apple tart or simple trifle.

Supper, 5.30 P.M. A lightly boiled, baked, or poached egg, or a scrambled egg or two. Two slices of thin crisp toast and butter and a cup of milk. A little stewed fruit from the foregoing list, or baked apple, or baked banana with milk or cream, and from one to two tablespoonfuls of Plasmon jelly.

Second Day.

Breakfast, 8 A.M. Porridge and milk with cream or butter. A lightly boiled or a poached or baked egg, or a scrambled egg or two, or plain omelette. A couple of slices of thin stale bread and butter or thin crisp toast. A cup of milk with a dessertspoonful of Plasmon jelly.

9 to 10 A.M. Fresh fruit.

Dinner, 1 P.M. Soup, or pea or lentil purée. Minced butcher

meat, or chicken or fresh tongue with potato and vegetable. Custard or junket or jelly.

Supper, 5.30 P.M. A saucerful of farina or farola and milk, or bread and milk, or soft boiled milky rice, or florador or corn-flour or ground rice and milk, each with a couple of tablespoonfuls of Plasmon jelly added. A little stewed fruit or baked apple or banana, with milk or cream.

At the Sixth Year.—The child may now have adult diet with the following restrictions for at least two years :—No new bread, new currant buns, or new potatoes; hot scones, muffins, or hot thick buttered toast; no rich fruit cakes, or pastry other than a little apple tart occasionally. No second cooked meat stews, rissoles, croquettes, tinned meats and fish, shell fish, or pork or sausages; no curries or salted, cured, or highly seasoned dishes, except a little fat bacon, and fresh potted meat. No fried meats, but grilled are especially good for the child. No mushrooms, no fried fish, fried eggs, fried onions or fritters; very little duck, goose or game, and veal, unless very well *stewed*, is not to be recommended. No sauces, pickles or condiments, except a due amount of salt which should always be given. No raw salads, such as lettuce, cucumber, radishes, celery and mustard and cress; and whole tomatoes, cabbage and greens, maize from the cob, grenadillas, gooseberries and guavas are not to be advised. Mangoes are rich and stringy, and should, like pine-apple, be given with caution. No nuts or almonds or sweets containing these, but well-roasted or boiled chestnuts are much to be advised. No wines, and tea and coffee very sparingly, always freshly made and weak and merely flavouring the milk. No ices or iced foods.

Essential points to remember in feeding a child under the age of six.

1. Variety in diet, which is so strongly recommended by Dr. Eustace Smith, is not only appreciated by the child, but aids its digestion so that its nutrition is improved. The remark should apply especially to the use of porridge and milk puddings and cooking of eggs.

2. The child should have two pints of milk daily, plain or in the form of cocoa or chocolate made with milk. Plain milk will be safer and more easily digestible for the child if it is scalded during

the second year. The child should be taught to drink its milk in sips, never in a draught, which forms a solid curd in the stomach that is difficult of digestion. Children with more delicate digestions will often take the necessary quantity of milk quite satisfactorily if it is given *diluted* with one-third water or two tablespoonfuls of lime water. If therefore the child has a tendency to stomach-ache or attacks of stomach upset when the diet is carefully regulated on the above lines, and especially if its tongue is often furred and breath unpleasant, milk should not be stopped, but it should be scalded and given diluted, and Plasmon should be used with caution, and should not be added to milk.

3. The child must not have too much starchy food. All starchy milk puddings must be especially well cooked according to recipes. Tapioca, sago, macaroni, and vermicelli are better not given until the second year is complete, and then only once a day with the meat meal. The fine wheat preparations, farina, farola, and florador (which last should never be given to babies in spite of the directions), form suitable supper or breakfast dishes from the fifteenth month onwards, and must be cooked for *one hour*, and the last-named *half-an-hour* respectively. Corn-flour, arrowroot, and ground rice must be cooked for *half-an-hour*, and, since they are constipating and not so nutritious as the other cereals mentioned, should not be given too frequently. The daily loaf should be thoroughly well baked, and the doughy, sourish, alum-adulterated loaf which one sometimes gets, should be avoided. Bread and milk should be made with stale crumbed bread, not bread broken into pieces or cut in cubes. Porridge, such as oatmeal, and the various oat preparations, maize meal, hominy, and the coarser wheat preparations, such as "cream of wheat" and "Wheatena," and semolina, should not be given before the eighteenth month, and all these porridges must receive prolonged cooking according to directions on p. 199. Rice, if whole grains are used, is as well not given before the eighteenth month, and should then be cooked in the milk till thoroughly swollen and tender. After this age, it forms a useful vegetable, and is much appreciated with gravy.

4. Eggs should have a high place in the dietary. An egg should be given daily, if the child digests it well, from the twelfth to the fifteenth month. After this two eggs may often be given daily, but one should be given in the form of broth or milk flip

or milk pudding. When poached or boiled, the egg should be given well mixed with bread, in which case it is far less rich, and the old-fashioned method of cutting the bread and butter into narrow strips and dipping the end into the boiled egg for each mouthful is much to be recommended.

5. Cooked meat juice or the juice which runs out of the joint should be given daily at the twelfth month, and for the first eighteen months made gravies should not be given to the child, and after this should be well skimmed of fat. Good broths specially prepared, and not soup, should be given from the twelfth to the eighteenth month. After this age pea and lentil purées are especially valuable for the flesh-forming ingredients which they contain. Good thick vegetable soups, which include dried peas and lentils, as well as such fresh vegetables as carrots, turnips, tomatoes, onions, celery, and potatoes, are much to be recommended, but should be thoroughly cooked and carefully strained.

6. Red meat should be given at first every other day and then daily, but only once a day after the thirteenth month. Until the child is two years old and has cut nearly all its first teeth, the meat should be scraped and given as pulp. This may be varied with chicken, turkey, or tongue, which should be pounded until the second year is complete. At two years old the meat may be minced with a knife and fork, but should never be put through a mincing machine. All roast or grilled meat should be given underdone rather than overdone, since it is much more digestible so, and, if carefully and scientifically cooked, frequently turned, and, in the case of roasts, frequently basted as well, it will be thoroughly cooked. Second cooked meat and cold meat are never to be advised.

7. All vegetables should be especially well cooked, until so tender that they can be mashed with a fork, and they are better steamed than boiled. Vegetables and onions used in fresh stews and in soups which are not strained should be cooked until *quite soft*, and, if hard, strained off. Such vegetables as green peas and beans, parsnips, carrots and turnips should never be given if *old*.

8. The fruit given should be ripe, prepared, and never eaten in too large a quantity at one time, especially in very hot weather. Fruits with many or large seeds or tough skins are not to be recommended.

9. *Plenty of fat* must be given in the form of butter or cream,

especially with porridge or other starchy food. Butter is more essential than jam or honey on the bread, and cream is much to be recommended with stewed or baked fruit.

10. Jam or honey, golden or maple syrup should be given in due amount. It is wise to limit the use of these to *either* breakfast or supper. Foods should be sweetened only just enough to make them acceptable to the child. Sweet soft rich biscuits and "fingers" are not to be recommended. Sweets should only be allowed about half-an-hour after a meal, and then only selected ones.

11. The addition of Plasmon increases the nutritive value of certain foods. It should be boiled for two minutes and prepared as a jelly, and then added thus to foods in measured quantities.

12. The child should be taught to bite up all his food and to chew it well, not to swallow any hard bits whole, nor to bolt his meal in a hurry.

13. Children essentially require drinks of cold boiled water between, and not with, meals, and these should never be allowed when the child is heated after play or exercise, except in sips to quench thirst. Drinking water should always be boiled for the child during the first two years. After this it need not be boiled in large towns in England, where the water-supply is known to be pure; but it should always be boiled in the Colonies and in the country in England. Well water especially should always be boiled. Boiling is preferable to filtering, since only one or two special filters are reliable, and these need special cleansing.

14. Some children can manage to eat without obvious ill result many of those articles of food which are stated to be inadvisable, but apart from the fact that much childish ill-health results from the inclusion of unsuitable food in children's dietaries, a strong digestion and one able to cope with a wide range of foods is more likely to be ensured later on if the digestion is allowed a chance of developing soundly and gradually during childhood—of building its foundations well.

Suitable Sweets.—Good "drops," sugar candy, barley sugar, toffee, butter-scotch, Edinburgh rock, caramels and peppermints. Good plain chocolate which is excellent; milk chocolate which is rich more sparingly; chocolate creams which are very rich only very sparingly after the second year. Jujubes, fruit "jellies," and Turkish delight, good dates, and marrons glacés, and the softer

crystallised fruits are all permissible, but no cocoanut or almond or nut sweets, almond icing or nougat should be allowed. Figs in good condition and Carlsbad plums and well-roasted chestnuts, which are nutritious, may be given after the fifth year, but raisins are not to be advised. These, like currants, usually pass through the bowel unaltered and often irritate it.

Parties.—These are not very wise entertainments before the fourth year. After this age they should begin and end at a reasonably early hour, and one might quote as good advice here the left-hand corner announcement of a small hostess writing her own invitations, "Come at four and go at eight." The parties should not be of very frequent occurrence, since whatever the child's social demands later on, its nervous system is as yet unprepared for such constant stimulation and excitement. Rooms should be well ventilated, and if the children are to really enjoy themselves, well cleared and not overcrowded. The children should as far as possible be about the same age, and up to the eighth year at any rate, popular games, charades, music and dancing, and an interesting supper, with the assistance of a few grown-ups who understand children and are willing to work hard for their amusement, are usually far more appreciated than formal entertainments.

Parties, like Christmas feasting, are frequent sources of stomach upset in children, owing to the fact that dishes are not properly and specially selected and prepared for the little folk. It is possible, however, with a little consideration and knowledge of the limits of a child's digestive powers to arrange a party which will be an entire delight, and devoid of any unpleasant consequences and necessary dosing. Simple and suitable dishes in great variety may be prepared from bright-coloured jellies, coloured blancmanges, simple creams and sponges, farina, rice and florador moulds and "snowballs," custards, sponge-cakes, whipped white of egg, and cream; with the aid of cochineal and vegetable colourings, sifted sugar, coloured, "hundreds and thousands," silver sweets, angelica, glacé cherries and other crystallised fruits and flowers, preserves, and fruits and sweetmeats selected from the foregoing lists. Simple trifle prepared without almonds will be, perhaps, the most popular dish. Sponge, chocolate, corn-flour, rice and other white or snow cakes are all suitable, and these may be iced and decorated with plain icing (prepared from egg-white and sugar only) to a

child's entire satisfaction, but heavy, rich fruit-cakes,¹ *pastry* and most *petits fours*, like ices, iced drinks, and "grown-up" sandwiches, are very inadvisable. Brightly glazed meat dishes, chicken and similar dishes in aspic or cream sauces which are very suitable, brightly garnished with beetroot, hard-boiled eggs, parsley and butter piping, &c., are all allowable, and no unsuitable element need be introduced. Children are not so critical as they are sometimes credited with being, though they become so and not a little blasé if they are catered for as grown-ups, and frequently allowed to attend parties where a great deal of dressing up is demanded of them and observed by them. They love above all things colour in their food, and decorations which are bright and sparkling, such as are easily and inexpensively evolved from bright silk table draperies, ribboned baskets of bright fruits, gay crinkled paper, coloured paper frills, tinsel, the useful gold and silver paper spangles, &c., silver leaves, frosted leaves,—brushed with gum and sprinkled with "Jack Frost" or powdered glass—"Fairy lamps" or little coloured candles, crackers and Christmas tree ornaments, &c. Flowers and foliage, and pretty and "interesting" pictorial crockery must not be forgotten. A block of ice, especially in summer, hollowed out in the centre to contain a couple of small coloured glass lamps (red and green), such as "Fairy lamps," with its flashing rainbow colours, will form a delightful table centre.

RECIPES FOR ORDINARY DIET

Barley Water.—Take two level teaspoonfuls of Robinson's patent barley and mix it to a smooth paste with a little cold water. Heat a pint of water in a double saucepan till it boils, by putting the upper part of the saucepan over the fire or gas flame. Stir in the barley and bring it to the boil, stirring all the time. Then replace the upper saucepan in the lower, and boil the barley water for *half-an-hour*. Foods boil in a double saucepan, but do not so obviously show it by bubbling. Hence, in order to know when they begin to boil and to allow the correct time for cooking, they

¹ Currants should never be used in children's cakes, but *sultanas* may be, if swollen by pouring hot water on them and standing for five minutes, drying them, and then chopping them up on a board; and the flavour of all fruit-cakes is considerably improved by this means and the addition of a very little vinegar.

should always be brought to the boil over the fire in the upper saucepan as above before being placed in the lower saucepan. If well mixed and well stirred at the beginning of the boiling, there will be no lumps; if there are, the barley water must be strained. Boiling water should then be added to make up the original pint.

A level tablespoonful of barley should be used to one pint of water after the age of six months. Barley water easily ferments in hot weather; hence it will require making twice daily at such times, and cannot be advised for use during sea voyages through the Tropics.

Oatmeal Water.—Take Robinson's patent groats, or a good Scotch oat flour or *finest* Scotch oatmeal, and use the same proportions and method as in the case of the barley water, but cook for *three-quarters of an hour*. Strain if lumpy and add sufficient boiling water to make up the original pint.

Barley Jelly.—Mix four *level* tablespoonfuls of Robinson's patent barley to a smooth thin paste with sufficient cold water. Heat a pint of water in a double saucepan till it boils, by putting the upper part of the saucepan over the fire or gas stove. Stir in the barley and bring it to the boil, stirring well all the time. Then replace the upper saucepan in the lower, and boil the barley for *half-an-hour*. Stir vigorously every now and then, and beat the barley a little to keep it free from lumps. When cooked, add sufficient boiling water to make up to the original pint. A thin paste should be formed, which on cooling sets into a jelly.

Oat Jelly.—Take four *level* tablespoonfuls of Robinson's patent groats, or Scotch oat flour (such as Scott's Midlothian), or *finest* Scotch oatmeal, and mix to a smooth paste with sufficient cold water. Proceed exactly as for barley jelly, but boil for *three-quarters of an hour*.

Wheat Jelly.—Take four level tablespoonfuls of Imperial grannum, or of Chapman's entire wheat flour, and mix to a smooth paste with sufficient cold water. Stir into a pint of boiling water in a double saucepan, and proceed exactly as in the case of the barley jelly, but boil for *three-quarters of an hour*.

Barley, oat and wheat jelly (or bread jelly, see later) form the most suitable starchy food for the child at the eighth or ninth month and during the earlier part of the second year. They are very advisably given in change each day. When added to the feeds the

milk should be thoroughly warm, and the jelly should be well stirred up so as to mix it well with the milk. The resulting mixture should not be too thick to pass through the teat if made according to directions, but if it is, the aperture should be enlarged, or a special teat for thick food should be procured, or the child should be fed with a cup and spoon.

Plasmon Jelly.—Take *two level tablespoonfuls* of dry Plasmon powder. Take a breakfast-cupful (half a pint) of tepid water. Mix the Plasmon to a smooth paste in a basin with a little of the water. Then add the rest of the water, stirring well. Pour into a saucepan and bring to the boil and boil for *two minutes*.

Pour back into the breakfast-cup and add sufficient boiling water to fill up the cup, and thus have the same amount as at the beginning. This may be used hot or cold; it sets when cold into a jelly. More may be prepared, or less as required, but the proportions of Plasmon and water should always be the same.

Children from one to three years of age may have up to four level tablespoonfuls of this jelly or eight level dessertspoonfuls or sixteen teaspoonfuls in twenty-four hours.

Children from three to six years of age may have up to eight tablespoonfuls of the jelly or sixteen dessertspoonfuls in twenty-four hours.

Children over six years of age and adults may have up to sixteen tablespoonfuls in twenty-four hours, and adults up to double this amount.

In using Plasmon it must be remembered:—

1. That the dry powder must be measured out according to the above directions, and then made up into a moist form and boiled for two minutes.

2. That a certain definite amount only of the resulting jelly must be given as a maximum in the twenty-four hours—that is, less may be given, and usually will be, but not more. This amount is indicated above.

3. That this amount must be given in *divided doses and stirred into food*.

4. That it is not advisable to add Plasmon to milk for children under two years; and only in small quantities at any time to milk or junket for older children.

5. That it is very advisable to give it in broth, soups, porridge,

corn-flour, farina or farola, bread and milk, rice and milk, &c., and in farinaceous milk puddings ; and it may also be advisably added to stewed or baked fruit.

6. That its addition to porridge and milk pudding, milk, cocoa, chocolate, and gruels, soups and stewed fruits, is very much to be advised for nursing mothers.

Meat Juice (Cooked).—Take a piece of juicy steak or mutton, grill or fry it over a hot fire, until the outside is just seared, for about five minutes, turning it twice. Remove, cut into small pieces, and express the juice. This may be done with the back of a wooden spoon in a basin or a double lemon squeezer, but much more juice will be obtained and with much less trouble if a meat juice press such as that shown in Fig. 21, which costs 2s. 9d.,¹ is used. This is very simple, strong, and easily cleaned. A more expensive press, the “Hercules,”¹ which costs 22s. 6d., may be used, and this saves all labour in the extraction of the juice, which is effected by turning a screw.

Broth.—This may be prepared from veal, chicken, or mutton. Take one pound of meat, remove fat, and cut up and place in a pint of *cold*

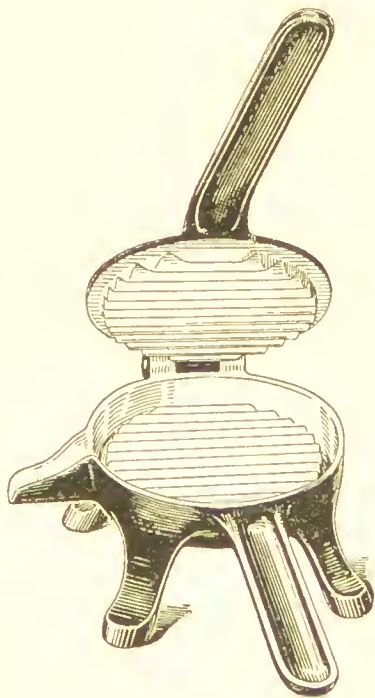


FIG. 21.—Breveté meat juice press.

water in a saucepan with a little salt. Stand for half-an-hour ; and then *simmer*, covered, for three hours. Stand a spoon in the saucepan, and note at the beginning the level on this to which the water reaches, and add *boiling* water from a kettle at hand on the fire from time to time, so that the water is kept up to this level, and that when the cooking is finished there will be one pint of broth. Strain carefully, and skim off *all fat* when cold.

¹ These can both be obtained from the Army and Navy Stores, London, and the “Hercules,” also from Whiteley’s, London, and from some other large ironmongers.

It is better to make the meat broth as above without bones, but it is very advisable to place any bones there are, especially fowl carcasses, veal knuckle, &c., into plenty of water and allow this to simmer for several hours, and to add the resulting stock which this boils down to, after carefully straining it, to the broth.

A good chicken broth may be prepared by cutting up a chicken or half a fowl with the bones, and simmering it in a quart of water as above, straining and skimming when cold. An onion, turnip, celery, slice of lean bacon or ham, peppercorns, cloves, and sweet herbs, if desired, may often be added in preparing the broth for older children in illness; and the jelly resulting when the chicken broth is cold may be eaten iced or otherwise.

When broth is thickened for the baby with patent barley flour, Imperial granum or Chapman's wheat flour, these should be *boiled in the broth* for the length of time indicated under the separate headings of *cereal jellies* prepared from these; and if corn-flour, florador, ground rice or ordinary flour is used either must be boiled for *half-an-hour*.

Broth Flip.—Stir into a breakfast-cupful of broth, not too hot, a well-beaten egg. Stir well and add a pinch of salt. Soup, beef-tea or Hipi may be used in the same way.

Scraped Meat Pulp.—Take a piece of thick juicy steak or mutton. This will be by preference fillet steak or the thick end of a large chop. Grill if possible; if not, fry in a hot frying-pan over a quick fire for about five minutes until the outside is just seared, turning it twice. Cut off the outside, and then scrape the pulp of the meat away with a blunt knife.

Bread and Milk.—Add about three-quarters of a breakfast-cupful of stale bread crumbs to a breakfast-cupful of milk boiling in a saucepan, and allow it to boil up. Sweeten to taste.

Children's Porridge.—Use one part of *medium* Scotch oatmeal or of maize meal and four parts of water. Sift the meal in just before the water boils with a pinch of salt, stirring well all the time, or better, mix the meal to a smooth thin paste with sufficient of the cold water and add it thus, and stir for ten minutes after it boils. Boil in a double saucepan for *three hours at least*. The porridge may with advantage be cooked for much longer, and should always be made the day before use.

Children's Puddings.—These should, if possible, include an egg,

and may conveniently be baked in a small half-pint pie-dish or in a small stout basin or mug holding the same quantity, so as to give the child the benefit of the whole egg, and of more variety. The farinaceous foods should always be thoroughly boiled in the milk in a double saucepan, covered, before being baked, when they can be thoroughly cooked and the right consistency obtained. The puddings should never be stodgy nor yet liquid, and invariable measuring of the quantities used should be insisted on in the kitchen. The flavouring should be varied between vanilla, lemon, lemon rind, nutmeg, a small stick of cinnamon, a small pinch of mixed spice, or a small bay leaf; and the puddings should be nicely browned.

Cup Custard Pudding.—Well beat an egg, place in a breakfast-cup, and fill up with cold milk. Add a little vanilla essence, and a good teaspoonful of sugar. Stir well. Stand cup in a tin in a little water and allow to just set slowly in a slow oven.

Corn-flour, Arrowroot, Patent Barley, Fine Florador or Ground Rice Puddings.—Use in the proportions of one and a half to two tablespoonfuls of either to a pint of milk. Mix to a smooth paste with a little cold milk. Stir into the boiling milk in a double saucepan and *boil for half-an-hour*. Add a beaten egg when a little cooled, sweeten and flavour and pour into a dish, and brown in a moderate oven.

If these preparations are to be used for moulds, each should essentially be boiled for half-an-hour.

Farina or Farola Puddings.—Mix a sufficient quantity of either cereal, usually in the proportion of about three tablespoonfuls to the pint of milk, with a little cold milk. Stir into the milk when boiling, in a double saucepan. *Boil for one hour*. When a little cooled, add a beaten egg, flavour, sweeten and bake until browned in a moderate oven.

If either cereal is to be used for moulds, it must essentially be boiled for one hour, and may be occasionally coloured pink in part or the whole with cochineal.

Rice, Macaroni or Vermicelli Puddings.—Use in the proportion of about half a teacupful of either to the pint of milk. Choose “curly” macaroni. Boil either in the milk in a double saucepan until *quite soft*. Add a beaten egg, flavour and sweeten and brown in a moderate oven. The macaroni may advisably be dropped into boiling milk, or may be previously parboiled in water.

Tapioca or Sago Puddings.—The tapioca should be soaked overnight, the sago one hour, in cold water. Use either in the proportion of three small tablespoonfuls to the pint of milk. Boil either in the milk till the grains are quite soft and transparent. Add a beaten egg, sweeten and flavour, and brown in a moderate oven.

Baked Bananas.—Choose *ripe* bananas. Peel them, sprinkle them with sugar and a few drops of lemon juice and put them into a baking tin, buttered, or with just enough water to cover the bottom of the tin, and a plate over the tin. Bake in a slow oven for half-an-hour. Give mashed with cream or milk.

Prune Pulp.—Soak the prunes in cold water overnight, when they will be considerably softened and well swollen. Stew them without sugar for several hours until *quite tender*. Put them into a sieve, and press them out well with the back of a wooden spoon, so as to force the pulp through the sieve. Sweeten just sufficiently, and give two or three tablespoonfuls of this with some of the juice, and, if possible, a little cream.

Note.—Dried fruits should always be soaked in cold water until *well swollen and soft* before being stewed; and only just enough water should be put in to cover them. They should then be gently *simmered* till quite soft.

Lentil or Pea Purées.—Soak half a pound of split peas or lentils (do not use the *flours*) in *cold* water overnight, and add a little bicarbonate of soda to the water. Boil with an onion, parsley, celery, slice of bacon, and a few peppercorns in a quart of water until *thoroughly soft*. Pass through a fine sieve. Put into a clean double saucepan and add by degrees sufficient broth, or good stock, or milk, to make a purée; adding now a little salt, which must not be added before this, and butter or cream. Stir until the mixture boils, and boil for a few minutes.

Split lentils, peas, and haricot beans are very nutritious on account of the flesh-forming ingredients they contain. Lentils should be soaked overnight as for purées or soups and cooked until thoroughly soft, but *slowly*, to prevent “mushing.” They may advisably be given during the school age, and eaten by nursing mothers, as haricot stews. That is, stewed with a little stock, onions (previously fried in a little butter), turnips, carrots, and peppercorns; thickening and butter being added before serving. Or they may be eaten as lentil pudding or with boiled rice and butter. Peas

and beans should be soaked for twenty-four hours, simmered till quite soft, and then rubbed through a colander—the resulting mixture being used to thicken soups, &c. ; or the large beans may be blanched like almonds after soaking, stewed, and eaten dressed with, or fried in butter as a vegetable. Unless prepared as described, peas and beans are difficult to digest, and flatulence producing.

Lentil Pudding.—Soak and simmer a good teacupful of split lentils as above, and rub them through a colander. Mix them with a small teacupful of grated bread crumbs, and a good teacupful of strained stewed tomato. Add a beaten egg, a pinch of carefully picked and finely crumbled dried sweet herbs, and a dessertspoonful of finely chopped parsley. Moisten with sufficient tomato juice, or milk, and add a tablespoonful of butter. Pour into a pie-dish, and bake for half-an-hour until nicely browned.

Boiled Tongue.—Select the tongue of a young animal, which should be smooth and will be more tender, and one which is fresh from the pickle and which has not been smoked at all. Ascertain from the butcher how long it should be soaked in cold water—this varies from three to twenty-four hours. When soaked, scrape and clean it well. Put it into a large pan with plenty of cold water. Cover and *simmer* till it is *quite tender* (usually about four hours), skimming off scum as it comes to the boil. Peel the tongue, and give to the child, cut in thin slices and minced or pounded. It may advisably be pounded with chicken in a mortar in convalescence from illness.

A Good Cheese Pudding.—Weigh four ounces of “curly” macaroni and break it up. Grate a piece of dry Cheddar cheese, so as to have five ounces, and put aside a couple of tablespoonfuls. Drop the macaroni into boiling water and boil till quite tender. Make a butter sauce as follows:—Put an ounce of butter and an ounce of flour into an enamelled saucepan, and stir till melted and smooth. Then add a breakfast-cupful of milk. When this boils, sift in the grated cheese, add a little mustard, pepper, and salt. Pour this sauce over the macaroni (from which the water has been drained off) in a buttered pie-dish. Sprinkle the remaining cheese over the top with a few bread crumbs, and bake till well browned in a slow oven.

Bread crumbs may be used instead of macaroni, well mixed with the grated cheese, and the hot milk with the butter melted in

it, poured over the mixture ; or rice (three ounces), prepared like the macaroni. These puddings form nutritious supper dishes during the school age.

INVALID AND SPECIAL RECIPES

Rice Water.—Use thoroughly well-washed rice. This is important when rice is being used for any purpose. Put two teaspoonfuls (one tablespoonful after the age of six months) of the rice into a pint of *cold* water in a saucepan and boil for *three hours*. Stand a spoon in the saucepan and note the level on it to which the water reaches at the beginning, and add sufficient boiling water from time to time to keep it up to the original pint. Strain carefully through a fine sieve.

Arrowroot Water.—Obtain a very clean pure arrowroot. Bermuda arrowroot, which costs about 3s. a pound, should be used if possible. Mix two level teaspoonfuls with a little cold water to a smooth thin paste. Stir into one pint of boiling water in a double saucepan, and boil for *half-an-hour*.

This is very useful for babies during severe attacks of diarrhœa ; and for older children (when a tablespoonful should be used to the pint of water or milk) as a drink during attacks of dysentery, since it has a markedly binding effect.

Bread Jelly (Dr. Cheadle).—Weigh four ounces of *stale* bread, without crust. Place it, broken up, in a large tureen or bowl full of cold water. The bread absorbs a great deal of water, and must be kept covered during soaking. Soak it for eight hours. Then pour off the water, and place the resulting pulp in a colander, and well squeeze all the water out of it by placing a large saucer over it, and pressing on this. Put the pulp into a pint of water in a double saucepan and boil for one and a half hours. While still hot, strain the resulting gruel through a fine sieve. When cold this sets into a jelly.

This jelly, made into a gruel with warm water, is sometimes ordered with suitable additions for delicate or wasting babies and is very easily digestible. It cannot be prepared in the warm weather in the Colonies, unless a refrigerator is available, since the bread ferments while soaking.

Egg-white Water.—Put the white of a very fresh egg into a

jug. Pour on it six ounces of cold boiled water (twelve tablespoonfuls, or one teacupful and two tablespoonfuls). Stir well to mix. Pour this into a bottle with a cork or stopper, sufficiently large to shake the mixture in—an ordinary soda-water bottle, or a fair-sized pickle-bottle will do well, or a large medicine bottle. Fit in the cork or stopper and shake well to and fro till a smooth mixture inclined to froth is formed; but do not produce a firm froth. Double or treble this quantity may be prepared as required, but less cannot be prepared since the proportion of egg-white and water must be kept the same, and it is not possible to divide and measure the raw white of an egg. This mixture may be made with barley water, or rice water, or arrowroot water instead of plain water. It is in general best made with barley water, since it forms a more satisfying feed for the baby so.

This egg-white water, in which, if prepared in the above proportions, the flesh-forming ingredient exists in approximately the same quantity as in breast milk, is perhaps the most valuable invalid food we possess for babies, since it is very easily digestible and easily prepared. It is especially useful for the baby's feeds in cases of diarrhoea or vomiting, when milk must be withheld.

It should be given in general in feeds the same size as the baby is accustomed to taking. It should be sweetened (see *Sugar*), and warmed just before use by immersing the feeding-bottle in hot water, but it must not be heated beyond the temperature necessary to warm the feed for use.

Egg-white Mixtures.—These are recommended for addition to the bottles in cases where whey, *which is preferable*, cannot be prepared, when weak cow's-milk feeds are used during the first three months of life for the reasons given on p. 141.

The mixture given under each age below covers the total amount of egg-white mixture required for the twenty-four hours. It should be prepared in the morning and added to the feeds as required according to the tables on pp. 156–158.

Third to Tenth Day.—Put the whites of two eggs into a jug. Pour on them four ounces (eight tablespoonfuls, or a teacupful less two tablespoonfuls) of cold water. Stir well to mix. Pour into a bottle, cork, and shake as in the case of *Egg-white Water*.

Note.—To measure the water in the absence of a graduated vessel, it may be measured as eight tablespoonfuls, or more quickly

by filling a teacup (which holds five ounces) quite full of water and removing two tablespoonfuls (one ounce).

Tenth to Twenty-eighth Day.—Use the whites of two eggs, and four ounces, two teaspoonfuls (a teacupful less one and a half tablespoonful), of cold water.

First to Second Month.—Use the whites of three eggs, and six ounces (a teacupful and two tablespoonfuls) of cold water, and proceed as above.

Second to Third Month.—Use the whites of two eggs, and four ounces (a teacupful less two tablespoonfuls) of cold water.

It is very advisable to use barley water (cold) instead of water both to make up the egg-white mixture and dilute the feeds at any rate after the first month. From the *third to tenth day* the total quantity of barley water required for the twenty-four hours will be $11\frac{1}{2}$ ounces. From the *tenth to twenty-eighth day*, $15\frac{1}{2}$ ounces. From the *first to the second month*, $17\frac{1}{2}$ ounces. From the *second to the third month*, $16\frac{1}{2}$ ounces.

Whey.—Use uncooked milk. Warm to blood heat—that is, just warm. Remove it from the fire and add rennet to it, in the proportion of one teaspoonful of rennet to one pint of milk. Stand till a curd is well formed, then beat the curd up well with a fork, so as to loosen and obtain as much as possible of the fat it contains. The whey should be strained through double butter muslin. The best way to do it is to tie the muslin like a jam-pot cover over a *large* basin, stretching it tightly. The broken-up curd should then be placed on this, and spread all over it lightly with a fork. It should be left to drip through, and the curd may be moved about gently with a fork every now and then, but must not be pressed or squeezed to force it through. Then put the whey into a jug; stand the jug in a saucepan containing just as much cold water as will surround the bottom half of the whey, heat, and boil the water for one minute. About six ounces of whey are in my experience obtained by this method from a breakfast-cupful (ten ounces) of milk.

Whey by itself is a weak food, and, made thus, contains very little fat, but is often useful in cases where it is advisable to avoid the curd of milk, as in cases of vomiting, in convalescence from disorders of stomach and bowels, or other cases of very weak digestion; or

as a diluent of cream for delicate babies¹ (see *Cream and Whey Mixture*); or to make up weak cow's-milk feeds, especially for young babies. *Fat Whey*, see Appendix p. 517, which is more quickly prepared, and contains nearly all the fat of the milk, is strongly to be recommended for this last purpose.

When given as a substitute for cow's-milk feeds, the whey should be given in general in feeds the size the child is accustomed to taking; should be sweetened (see *Sugar*), and should be warmed for use.

White Wine Whey.—Add five tablespoonfuls of cooking sherry to a large breakfast-cupful of boiling milk in a saucepan. Boil for a minute or two till a curd is formed, and then strain the whey off as above. This is sometimes ordered in cases of diarrhœa and vomiting.

Beef-Tea.—Take a pound of good juicy steak, preferably fillet or beef steak. Remove all fat and shred it finely. Place in a pint of *cold* water in a large earthenware jar, such as a marmalade jar, or, failing this, a jug. Stand for half-an-hour to an hour. Then tie on a thick brown paper cover securely, and stand the jar or jug in a saucepan of *cold* water. Heat up *slowly* till the *water* boils, then keep the water *simmering* for one hour. Remove the cover once or twice and stir the beef-tea. Then allow the water to boil briskly for a minute or two, and then remove the beef-tea. Strain through an ordinary sieve, removing the meat, but not the sediment, which is the most nutritious part. Skim off all the fat when cool.

Heat up the beef-tea for use by standing it in a cup in a basin of hot water, after stirring it well to mix up the sediment.

It is not advisable to give strong beef-tea to children under three years of age, and never Bovril without the doctor's instructions. Hipi, however, which is a digestible mutton essence to be made into a broth with water, will often be useful.

Egg Flip.—Break a very fresh egg, and remove the stringy bits of the white. Beat the egg well. Sweeten and flavour with nutmeg or vanilla. Pour into a tumbler and fill up with milk, stirring well. Or pour the beaten egg into a breakfast-cup; sweeten and flavour and fill up with boiling milk, stirring well, and give hot.

¹ Whey, when it is being made constantly, may be prepared cheaply, from skimmed or separated milk (not *scalded* milk left from the preparation of Devonshire, or clotted, cream) which can be bought for a penny or twopence a quart.

Oyster Eggs.—A perfectly fresh egg should be broken, the white allowed to drain off, and the yolk slipped without breaking into a dessertspoon. A little broth or beef-tea or meat juice, or sweetened milk should be poured over this to flavour it and the egg thus swallowed whole.

In diphtheria and other cases where small amounts of concentrated nourishment are required frequently these are often very useful if the child can be got to swallow them.

Milk in Illness.—Milk requires to be diluted in illness even for older children as a rule in order to prevent the formation of hard curds in the stomach, and the same result is better achieved if the milk is given scalded rather than raw. The diluent may be about one-third water, or lime water, soda or Vichy water, barley water, oatmeal or rice water. Soda water added to boiling milk, half and half, makes a very pleasant drink.

The nutritive value of milk may be increased by shaking the whites of one or more eggs with it (see *Egg-white Water*), or by the addition of Plasmon jelly (see this) or of Hygiama (see this) or Infantina (see this). Since different flavours make the milk more acceptable, the addition of a tablespoonful of Allenbury's malted food or Mellin's food is often advisable.

In cases where milk is not well digested it may be rendered more digestible by the addition of citrate of soda (see this), or of bicarbonate of soda solution (see this), or by peptonising it.

Peptonised Milk.—By putting milk through the process of peptonisation we predigest it as we do both the milk and the starch in making Benger's food. Milk is most conveniently peptonised by the use of Fairchild's peptonising powders, which are supplied in tubes intended to be used in the proportion of one powder to a pint of milk.

To peptonise one pint of milk:—Have ready a pint (two large breakfast-cupfuls) of uncooked milk; a small teacupful of chilled water; a bottle large enough to shake the milk and water in—an ordinary brandy-bottle will do, or quart dairy milk-bottle—a tube of peptonising powder. Put the powder into the bottle; pour on to it the water; shake well to dissolve the powder. Then pour in the milk and shake all up together. Stand the bottle in a large basin of water *as hot as the hand can just bear comfortably for ten minutes*. Sweeten; then pour into a saucepan, bring to the boil,

and boil for *two or three minutes*. This milk is partially peptonised, which is sufficient for most cases. If the doctor orders it to be more completely peptonised, it must be stood in the hot water for twenty minutes to half-an-hour, when it will taste bitter.

For babies the milk will usually have to be peptonised for fifteen to twenty minutes and given diluted, according to age. Barley water will sometimes be used, but water is usually the best diluent.

Predigested foods are very useful for temporary use, but many authorities are of opinion that we cannot adopt them continuously without harm to the child, since they believe that the stomach, if not called upon to perform its own digestion, will gradually lose the power of doing so. For this reason I have advised mothers not to use peptonised milk or Benger's food, suggested for use under special circumstances, for a longer period than at most one month and three months respectively.

Gruel.—Mix one heaped tablespoonful of Robinson's patent groats, or Scotch oat flour, or finest Scotch oatmeal with enough cold water to make a smooth paste. Stir into a pint of boiling milk or water, according to whether milk or water gruel is desired, in a saucepan. Stir well and boil for thirty minutes. Add salt when cooked, and sweeten to taste.

This when made with milk, and especially if one or two tablespoonfuls of Plasmon jelly are added (see *Recipe*), is a very useful drink for nursing mothers. Imperial granum (see this) or Robinson's patent barley may be used if preferred.

Imperial Drink.—Pare the rind of a lemon thinly; cut it into small pieces and put into a jug with a dessertspoonful of cream of tartar and two tablespoonfuls of white sugar. Pour in a quart of boiling water. Cover and strain when cold.

Red Currant Tea.—Pour half a pint of boiling water on to a heaped tablespoonful of red currant jam, strain through muslin when cold. Black currant jam may be used in the same way.

Children are particularly fond of this drink and also of Imperial Drink.

Lemonade.—Slice two lemons thinly. Add two tablespoonfuls of white sugar. Pour on one and a half pint of boiling water. Strain when cold.

PART III

DIFFICULTIES AND ILLNESS IN INFANCY AND CHILDHOOD

CHAPTER IX

INFANT DIFFICULTIES

“ The world goes by
And joy may pass, or woe may come,
Yet with a mild and placid eye
I sit—and suck my thumb.

... I see my honoured sire
Beset by worry, grief, or ire.

Yet here I sit beneath his eye
And silently exemplify
A rule of life to overcome
His every woe. I wonder why
He will not—suck his thumb !”

—E. V. COOKE, *Chronicles of the Little Tot.*

Crying.—It is necessary for newly-born babies to cry, in order that their chests may expand properly and their lungs be filled with air; but after this, *healthy* babies who are happy babies do not cry much. Still, as crying is the baby's only method of making known its wants and troubles, it is very important to recognise what its crying means, and, having made sure of the cause, to treat it suitably. It must be realised that the properly trained baby who cries incessantly is unwell or starved and not bad tempered. If the baby is not regularly weighed each week from birth, it may easily be starved, especially on the breast if the quantity of milk is insufficient; and if the signs of indigestion are not well understood, the baby, especially the bottle baby, may often be thought to be “cross” when constantly in pain.

Briefly, a baby may cry from hunger or thirst; because it is cold, or because it is uncomfortably hot, or over-weighted with clothes; because it wants merely to be taken up and nursed; because it is wet; cramped from lying too long in one position; worried by flies, fleas, or mosquitoes, or prickly heat; because its clothes are tight or uncomfortable; because it has wind or in-

digestion, causing pain in its stomach or bowels; because it is constipated, and straining as the result; has thrush spots within the mouth, sore buttocks; suffers from earache, irritation of a tooth, pricking of a pin, discomfort in passing its water, or from headache and slight feverishness; or because its bones are tender from the existence of scurvy or rickets.

When a baby, whose feed is not due, wakes from its sleep and cries, or when put down to sleep refuses to settle, the mother should make sure that it is dry, its clothes loose and smooth, and pins securely fastened, and its temperature satisfactory, and that it is not suffering from colic, should turn it and place it comfortably in its cot, and then endeavour to soothe it without taking it up, even if it continues to fret and cry. If it is crying solely to be taken up, it will cease after a few such attempts. This does not mean that we should let a young baby scream itself purple and almost into a fit, which may sometimes happen in nervous babies who cry long and loudly, nor that the unwell or teething baby will not need comforting or soothing to sleep; but that the habit of crying merely to be taken up must not be encouraged.

Signs of Flatulence, Stomach-ache or Colic.—If a baby whose feed is not due cries a great deal when awake or being nursed at any time, or wakes constantly from its sleep and cries rather with a moaning and worrying cry, sometimes with periodic screams, and grubs its fists into its mouth (which may mean hunger, but as often points to the condition under discussion), the mother should suspect *stomach-ache or colic*, and be certain of this if the baby's abdomen feels hard, as it cries in fits and starts and sometimes draws up its legs, or kicks spasmodically; and not infrequently shows a blue line round the mouth. Babies suffer intensely from stomach-ache, and it should never be allowed to go on.

Immediate Treatment of Flatulence, Stomach-ache and Colic.—The baby's feet should be felt and *kept very warm*. Gentle rubbing and kneading and firm pressure of the abdomen, both in its upper and lower part, with the hand warmed and the baby's clothing, especially the binder, loosened as he lies on his face over a knee on the lap or on a well-covered hot-water bag, or else over the mother's shoulder, or on his back, afterwards being turned over, will often give relief if the pain is due merely to passing wind. Here it may be said that when babies are fretful or restless, they are always more com-

fortable in one of these positions than lying flat upon their backs. A certain amount of wind and consequent discomfort is common in all babies during the first two or three months while the stomach and bowels are becoming accustomed to their work of digestion, but after this period the child should be little troubled if its food is properly administered and suiting it. Half a teaspoonful of dill water may often be advisably given in the bottles to relieve this flatulence, or after the breast feeds. In older babies a great deal of wind and consequent pain is frequently caused by the giving of too much ordinary starchy food or this insufficiently cooked; and the giving of such food to a *young* baby before its digestion is able to deal with starchy food often underlies the condition. The use of an excess of *malted* patent foods or of sugar in the feeds is another common cause of flatulence. These points should always be investigated and, if existent, corrected.

If the crying continues and the baby is obviously suffering from stomach-ache or colic, it should be given a *dose*, and, if this is unsuccessful, an *injection*. The *dose* should consist of a teaspoonful of warm water, or of dill water containing three drops of sal volatile, one drop of essence of peppermint, and a small saltspoonful of bicarbonate of soda, sweetened with two or three drops of glycerine or a little sugar; and it should be repeated in half-an-hour if necessary. The *injection* should consist of two tablespoonfuls of a mixture prepared by shaking five measured drops of chemist's oil of turpentine and a teaspoonful of castor-oil till *thoroughly well mixed* in a bottle, and then shaking this well up with a tablespoonful and a half of warm water or, better, warm barley water, if at hand. This should be given very slowly, just comfortably warm, with a glass syringe, the tip of which has been dipped in sweet oil, the baby meanwhile lying on its stomach on the hot-water bag. This treatment should be followed in half-an-hour by a dose of castor oil, which should be given on an empty stomach.

Castor-oil Dosage.—Give fifteen drops until the child is three months old; half a teaspoonful until it is six months old; one teaspoonful until it is twelve months old; one and a half teaspoonfuls until it is eighteen months; two teaspoonfuls up to four years; three teaspoonfuls from four to eight years.

The child will often be relieved and soothed by immersion in a hot bath (at 100° F.), or by the application to the abdomen of

hot wet flannels (see *Fomentations*), or, best of all, a warm linseed poultice (see *Poultice for Abdomen*).

Causes of Stomach-ache and Colic in the Breast-fed Baby.—The cause in the breast-fed baby can usually be ascribed to one of the following:—Irregular nursings, or, in the case of a strong hungry baby and a plentiful milk supply, not leaving a sufficiently long interval between these. Excessive red-meat eating in the mother and insufficient exercise or often the drinking of stout. The existence of the monthly period, or of pregnancy, producing a change in the milk, which renders it temporarily indigestible. Over-exertion or nervous excitement in the mother just before putting the baby to the breast. Indiscreet eating in the mother of indigestible foods and sour fruits. The mother's use of strong aperients. Insufficient warmth of the baby's feet, and exposure of its legs, thighs, and abdomen.

Treatment.—The mother should carefully regulate her diet and bowels according to the sections on these in Chapter V. She should avoid stout; should eat butcher meat strictly only once a day at midday, and should take more walking exercise, or substitute poultry or fish for red meat for a few days, since excessive red-meat eating and a too sedentary life make the milk too strong and indigestible for the baby. It is sometimes a little strong if the mother takes too much solid flesh food while still "lying in." She should avoid nursing just after a walk or other exertion, or after a mental upset or nervous excitement of any kind. She should avoid entertainments and social functions, especially dinner-parties, which make the nursings and diet irregular. She should feed the baby strictly by the clock, and often *making the intervals longer* will set the baby's digestion right. She should also ensure that the milk is taken slowly by compressing the base of the nipple between the two fingers, or, if the baby gulps, by withdrawing the nipple from time to time.

The warmth of the feet should be ensured by the use of a well-covered hot-water bag in the cot or pram and by enclosing the child's legs, thighs, and abdomen in wool (see p. 46) on the colder days.

The mother should refer to the sections on *Monthly Period* and *Pregnancy* in Chapter V. for the influence of these and the management of the baby under such circumstances.

If the tendency to colic is persistent in spite of attention to all the above points, advice should be sought, since the condition is one which should never be allowed to go on.

Causes in the Bottle Baby.—The cause will nearly always be found to lie in one of the following :—Irregular feeding, leading to an overloaded stomach, which has not finished digesting one meal before it has to deal with another. Too large feeds. Bolted feeds. The use of food which has been kept too long. The use of too strong a milk food, when the motions contain curds and are often too loose or greenish. Often the baby in such cases will take its feed ravenously and appear to be temporarily soothed by it, but the pain is worse soon afterwards when digestion begins, and there are either fits of screaming or constant fretfulness and crying. Colic is also often due to insufficient warmth, as in the case of the breast-fed baby. In the older baby the use of too much starchy food, or this insufficiently cooked, or such food given too early is a not infrequent cause. In such cases the motions are often frothy and sour smelling and irritating, causing redness and soreness of the buttocks.

Treatment.—The feeds should be given strictly by the clock, and if the baby is vigorous and taking large feeds, or a fairly strong mixture, the intervals will often be advisably made longer. The feeds should be taken slowly, never in less than twenty minutes, and the selection of a stiffer teat with a smaller opening (round rather than leech-bite) or a bottle without a second opening (see p. 123) will sometimes effect this. The feeds may be too large for the baby's stomach capacity, and smaller feeds may suit it better.

In the case of condensed milk or patent foods the quantity used in the feeds may be too much for the baby's digestion, when it should be temporarily *decreased*.

In the case of cow's milk the freshness of the milk given and also of any cream used should be ensured by tasting them on arrival and scalding the milk promptly, and by ascertaining *how old it is* on arrival at the house. If this point is not attended to, quite *old* milk, and very often very old cream, will often be given to the baby, especially in large towns and in winter. If "nursery milk," or milk from one cow, is being given, the effect should be tried of stopping this and replacing it by ordinary mixed milk. *Wide-necked* milk-jugs should be used, thoroughly scalded, and the milk kept very cool. The milk should be scalded and diluted with barley water if this is not

already being done, and from two to four teaspoonfuls of sweetened lime water should be given just before each feed.¹ If these measures are not successful, the *strength of the mixtures should be reduced*, that is, proceed as follows :—Give the same sized feed, but give less milk in it,—in a larger feed omitting perhaps one tablespoonful, or two or three tablespoonfuls, as the case may be ; in a small feed omitting one, two, or three teaspoonfuls as necessary. In all cases extra diluent should be used to replace the quantity of milk omitted. Having found a mixture which the child digests comfortably this should be used for a week or so, and then the milk should only very gradually be increased again by the addition of half a teaspoonful a day at first (omitting the same amount of diluent) until the strength suggested for its age is taken well.

In the case of the baby who is taking starchy food the amount of this should be reduced, and that given should be very well cooked ; and if unchanged starchy food (see p. 115) is being given to the baby under eight months, this should be stopped until the child has reached a suitable age for it.

If the trouble does not yield to any of these measures, advice must be sought, and must not be delayed, especially if the stools are abnormal and contain undigested food.

Sudden Twist of the Bowel.—If a child screams suddenly and violently in the midst of its play, perhaps vomits, often making straining movements with the passage of some slime, containing perhaps a little blood, *especially if it screams at intervals* and seems at first to be more or less comfortable between times, a grave abdominal trouble, such as a sudden *twist of the bowel*, should be suspected, and the doctor sent for at once. In the meantime the child should be kept perfectly quiet and warm ; no movement should be allowed, no rubbing attempted, and no food or *aperients* given.

Earache.—The baby who suffers from *earache* often presses the side of the head against the mother's breast and screams constantly, or will sometimes bore one side of its head into the pillow, and later touch the affected ear with its hand. It sometimes wakes with a start and screams during the night, moving its head restlessly about. Earache is not uncommon during teething, and *medical advice should be sought as soon as possible in all cases*. The treat-

¹ The use of bicarbonate of soda solution instead of lime water, in each feed, as recommended under *vomiting*, for a time, may rectify the condition.

ment given is only that for the immediate relief of the child. The ear should be filled from time to time with warm one in forty strength carbolic oil (see *Medicine Cupboard*), or, failing this, with warm olive oil or glycerine. These should be warmed in a teaspoon, but should not be used too hot, and the head should be held steady to retain the fluid for a few minutes; and a small cone of *warmed* cotton wool should be inserted and left in position.

Salt-bags.—Two small flannel bags about two or three inches square should be made. Some kitchen salt should be put into a frying-pan and heated over the fire, stirring it about from time to time to prevent burning, or the salt may be heated on a plate in a hot oven. When thoroughly hot it should be turned into the bags, which should be loosely filled, and these should be tied round the neck. If one is placed over the ear, and the other *behind* the ear, and a stocking or strip of flannel passed round the head and tied under the chin, the child will be much relieved. Failing these it should be given a well-covered hot-water bag to rest the side of the head and ear against; or hot fomentations (see these) applied.

Vomiting: Return of Food.—A baby often returns a mouthful or so of its unaltered food, without apparent effort or discomfort, immediately after a feed. If a large quantity is frequently returned, it is usually an indication that it has rather too much at a feed, or that it takes its feed too fast, or that it is not kept lying quietly on its side after the feed, as it should be. Or the child may have too tight bands about the waist, especially a binder improperly and too tightly applied. It may be that the food is too rich in fat, and in this case the child often passes rather large soft and greasy motions, or motions which smell unpleasantly, and may be irritating, causing sore buttocks.

Vomiting.—The baby may vomit—1. Very soon after a feed. 2. It may vomit some time after a feed. 3. It may be a little sick constantly. 4. It may vomit severely and keep nothing down.

In cases 2 and 3 there will probably be curds in the stools. In case 4 the stools will probably be very frequent, greenish and offensive; if not at first, becoming so very soon (see p. 242).

When a baby vomits in any degree the cause should be ascertained at once, and suitable treatment adopted.

In the Case of the Breast-fed Baby.—The cause of vomiting, especially in case 1, may be irregular feeding, leading to an over-

loaded stomach. Too large feeds or feeds too hastily taken. Insufficient exercise and too much red-meat eating; stout-drinking, or mental upset before nursing, or the existence of the monthly period or of pregnancy in the mother.

Treatment.—The mother should carefully regulate the feeding intervals and the rate at which the milk is taken, and the several points in the management of her own life, according to the suggestions given in Chapter V. She may try *prolonging the intervals* between nursings, which will often rectify the condition, or giving the baby, if it is vigorous, less time at the breast.

In the case of the very young baby, if the mother obtains such a little apparatus from the chemist as that shown in Fig. 14, and with this draws off about a teaspoonful of milk, which she throws away, before putting the baby to the breast, the sickness may cease. Sometimes the first milk, which lies in a little reservoir just beneath the nipple, is too rich, and this is sufficient to upset the delicate digestion of the young baby, and its removal has sometimes an immediate effect in preventing the sickness.

The mother may try giving the baby from two to four teaspoonfuls of lime water, or two or three tablespoonfuls of sweetened barley water (see *Recipe*) just before each nursing.

If the child is still inclined to vomit, it will be very advisable to give two or three feeds of sweetened egg-white water or sweetened whey (see *Recipes*) before returning it to the breast. This may be relieved, if uncomfortable, in the meantime by pressing out a little milk, or drawing off a little at the ordinary feeding hours with the apparatus mentioned above.

In the Case of the Bottle Baby.—If the baby vomits soon after a feed, the cause will very likely be too frequent feedings, or too large feeds, or a feed taken too fast. It may be that the food given is not fresh, and this may apply to any foods, though especially to cow's milk, cream, and condensed milk. It may be that too much fat is being given in the food, in which case the motions are sometimes very greasy; there may be a tendency to diarrhœa, with offensive or irritating motions, or the baby may be *constipated* and vomit, look pale and lose its appetite.

If the baby vomits some time after a feed, or is a little sick constantly, it may be that too strong a milk mixture is being given; in which case there are often lumpy "curds" in the sour-smelling

material brought up, and these "curds" will generally be seen in the motions as well. It may be, again, that too much cream or other fat is being given.

Treatment.—The several possible causes must be investigated and corrected if found—that is, the intervals of feeding, the rate at which the food is taken, the amount of fat given, the freshness of the food given, and the food strength.

If curds are seen, and the time at which the vomiting takes place and the character of the motions suggest that inability to digest the curd of cow's milk is the cause, the mother should try to rectify the condition as follows:—*Ensure the freshness of the milk or cream given* (see p. 231). Scald the milk and dilute it with barley water, and add lime water, if this is not already being done. If this is not successful, *reduce the strength of the mixtures*, as in the case of stomach-ache or colic (see this), and meanwhile add *bicarbonate of soda* to each feed as follows:—Dissolve half a teaspoonful of bicarbonate of soda in three ounces (six tablespoonfuls) of cold water. Add this mixture to the feeding bottle (omitting lime water) in the proportion of one teaspoonful for each ounce of food. As the vomiting ceases and the baby's digestion improves, reduce the dose by using one teaspoonful to every *two* ounces of food, and finally add a teaspoonful to every bottle feed, whatever the size, for a few days. The use of bicarbonate of soda should not be continued after the child's digestion has become normal. If the tendency to vomiting does not cease with the above careful regulation of the feeding, fat given, and the freshness of the food, milk strength, &c., advice should be sought.

It will be *very advisable* where the vomiting is troublesome, and should always be done when the weather is warm, to give a dose of castor oil (see dosage of this), and to stop all feeding for a few hours to give the stomach complete rest. Small quantities of water or sweetened barley water should be given from time to time, and then a few feeds of sweetened white of egg in barley water or plain water, or sweetened whey (see *Recipes*) should be given before the ordinary food is returned to. If this were done in all such cases, many attacks of real digestive upset would be prevented.

If the child is seized with severe vomiting and diarrhoea, all food should be stopped, *especially milk foods of any kind*; a dose

of castor oil, in this case one teaspoonful under six months, and one and a half teaspoonfuls from six to twelve months, should be given, and medical advice should be sought promptly.

Constipation.—This, which is a common affection in infancy, is shown either by the passage of scanty-formed motions, or perhaps one hard and very small motion in the day, or no daily action of the bowels at all. It cannot be too strongly insisted that the mother should not continue the home treatment which she may well try at first, if the condition does not yield to the measures suggested, since the habit of constipation is easily formed in infancy, and once formed is very difficult to cure. This habit is one which underlies a vast amount of ill-health and actual illness in later life, and therefore in the care of children, especially in infancy, when it is so much more possible to educate the bowels to healthy action than at any later period, the question is of great importance, and it is one which should receive the mother's attention from the child's birth until it leaves school.

The bowel is an elastic tube, as the stomach is an elastic bag, and it has, in certain parts especially, a considerable power of stretching when necessary, as when it is repeatedly blocked by a collection of hard material, which in the natural way should pass out of it daily. But such continuous overstretching results in loss of tone and elasticity, and when this muscular tone is gone the bowel has lost its power of natural movement and the habit of constipation is set up.

The continual straining consequent on constipation is very likely in babies to lead to a rupture at the navel or in the groin, and the weakening of and loss of tone in the lower part of the bowel often results a little later in the descent of this, and its protrusion outside the opening of the bowel (or anus).

The treatment of constipation depends upon its causes, which are many, and which in many cases the mother cannot ascertain without special knowledge. A tendency to constipation would seem to be not infrequently inherited from the mother. Very many women who do not realise it, owing to ignorance of what constitutes healthy bowel action, are constipated, and this can usually be traced to lack of training in regard to the subject in youth.

It is, in cases where the child seems to be born with a tendency to constipation, most essential to educate the bowels at the very

beginning to form good habits, and to encourage the development of a healthy tone in the bowel.

The mother must realise that much harm is done by the repeated administration of aperients of any kind and use of injections and "cones." Castor oil, rhubarb, and syrup of figs *should never be given to the constipated baby*, nor would they be if the mother understood the action of these drugs on the bowel. Glycerine suppositories and soap cones, or, as I have known it to be used by an "experienced" nurse, a *soaped stick*, should also *never be used under any circumstances*. They are very irritating to the delicate lining of the baby's bowel, and not only keep up the constipation they are intended to cure, but often produce harmful effects in that part of the bowel itself.

The injection, however, of half to one teaspoonful of glycerine in a tablespoonful of warm water is a certain and permissible method of opening the bowels speedily *where such is necessary*, as when other methods have failed, or when illness or convulsions are threatening. Under no other circumstances should glycerine injections be used.

In breast-fed babies constipation is frequently due to constipation in the mother, and she should keep her bowels open with special care as indicated in this section in the chapter on breast feeding. The baby's bowels will often be regulated if the mother, if she has not a good daily action naturally, takes a half teaspoonful dose of "cascara evacuant" in a little water two or three times daily.

Sometimes the milk is poor, when the mother should take *more flesh food*, cream, butter, &c., and a good malt extract as suggested on p. 81. She should give the baby a few teaspoonfuls of cold boiled water between its feeds; a little fresh fruit juice daily (see *Fresh Fruit Juice*) will often be useful; or if from half to one teaspoonful of pure olive oil, sweetened, is given daily, this will often, especially in the earlier months, regulate the bowels.

If the motions are hard, or if the baby passes through twenty-four hours without a motion, the mother should give it an injection of a tablespoonful or two of olive oil, warmed by standing it in a cup in a basin of hot water. For method of giving injections see *Injections*. She should press the buttocks together after the injection and keep the baby quiet, to ensure its being retained long

enough to soften the motion. If within an hour or so there has not been a satisfactory motion, an injection may be given of two tablespoonfuls of warm water. Soapy water should never be used for babies.

If these methods are not successful, the mother should give the baby, temporarily, two or three teaspoonfuls of sweetened fluid magnesia once or twice daily. A supplementary bottle feed (see *Supplementary Bottle Feeding*) once a day, containing one teaspoonful of Mellin's or Hovis Food No. 1; or a feed consisting of Horlick's malted milk, with a teaspoonful or so of cream, daily, will sometimes successfully regulate the baby's bowels.

Massage of the Abdomen.—After the baby's bath each day, the

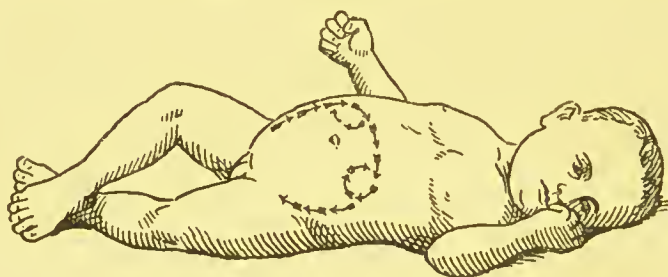


FIG. 22.—Massage of the abdomen.

mother should massage the abdomen. If this is done properly, it strengthens the muscles and disperses wind, and encourages healthy movements of the bowels. The mother should dip her fingers before the massage in warm olive oil, and with the baby lying on its back should use gentle rubbing movements—more like *strokes* than rubbing—with a firm though light pressure accompanying each stroke, and from time to time *gently* kneading the abdomen, and always using the *pads* of the finger-tips, and being careful to have her nails quite short. She must be careful to rub in the right direction, and this is indicated in Fig. 22. She should begin low down on the right side of the abdomen, work up the right side, across the top of the abdomen, just above the line of the navel, and then she should work down to lowest limit of the left side of the abdomen. The mother will get a good idea of the position and direction of the large intestine to which especially the massage requires to be applied from Fig. 15. When she reaches the right

top corner and left top corner above, she should rub gently but firmly round and round in a circle. In the case of older children the heel of the hand can be used for rubbing and kneading movements.

In bottle babies perhaps most frequently the constipation is due to lack or excess of some ingredient in the food, and the rectification of this often involves a fairly intimate knowledge of infant foods and feeding which can only belong to the physician who has specially studied it. Artificial foods are all unnatural. Milk unfortunately must be heated, which has a constipating effect. Patent foods are not only preserved foods but in the vast majority of cases deficient in fat, and cow's milk, as ordinarily diluted and given to the baby, rarely supplies it with the amount of fat it requires.

The constant irritation of the bowels by too strong milk mixtures often leads ultimately to constipation, especially after a tendency to diarrhœa has existed for some time. And after bad attacks of diarrhœa constipation is very common. It is also common in rickety children (see *Rickets*), largely because the muscles of the bowels and abdomen have no strength or tone. An insufficient amount of food may be a cause of constipation; and the badly nourished baby is often constipated, because sufficient food is not taken to produce a healthy movement of the bowels, and the motions in such cases are hard and scanty.

In the treatment the first essential is to see that the baby gets the due amount of fat in its food, and, if additional fat is not being given, it must be (see *Additional Fat*). The baby must also get a sufficient amount of all the necessary ingredients in its food and a sufficient quantity of food. Any irritation of the bowel, shown by the passage of motions containing "curds," must be removed by further diluting the milk; and sometimes using oatmeal water (see *Recipes*) instead of barley water to dilute cow's milk, or unsweetened condensed milk will produce the desired result. The use of fat whey (p. 517), which will remove these curds from the motions and still allow the baby to have a milk mixture strong enough to efficiently nourish it, is much more advisable, and whey has a slightly laxative effect.

If the child is being fed on cow's milk, which it is necessary to heat, or on Glaxo or other preserved food, and is constipated, though digesting the food well and having sufficient fat, fresh fruit

juice (see this), if it is not already being given, must be given regularly, and will sometimes rectify the condition.

Sometimes the addition of from half to one teaspoonful of Mellin's Food, Hovis Food No. 1, or the same quantity of a good malt extract, such as Maltine or Kepler's, to two cow's milk or Glaxo, or unsweetened condensed milk feeds in the day may regulate the bowels. These, whichever is used, should always replace the same quantity of sugar. The mother should be careful to give the child a few teaspoonfuls of cold boiled water between its feeds; and the massage of the abdomen should be done every day after the bath.

If the condition does not yield to the above measures, she should try giving it a teaspoonful of sweetened olive oil daily; or, if this fails, two or three teaspoonfuls of fluid magnesia may be given daily in a feed. If the motions are hard and scanty, or if twenty-four hours pass without a motion, the warm olive oil injection mentioned above should be given, if necessary followed by the warm water injection.

Home treatment should never be continued if constipation persists in spite of attention to all the above lines of treatment; and if the child is noticed to cry during an action of the bowels, this should receive medical advice at once.

Descent of the Bowel.—The bowel sometimes comes down in constipated children, and appears as a reddish mass outside the opening of the bowel. This should be pushed up gently with the child resting on its back, with two finger-tips oiled or anointed with vaseline, and the nails cut short. A tablespoonful or two of fluid magnesia or a dose of "salts" (see *Medicine Cupboard*), repeated as necessary, should be given daily for a few days to produce loose motions, and the child should pass its motions during the same length of time *lying on its back*, and not sitting upright on the chamber in the ordinary way. Constipation and straining must be most carefully avoided, and a recurrence of the condition always needs the doctor's care and treatment.

Dosage of "Salts."—*Under six months*, mix half a teaspoonful of salts in a tablespoonful of sweetened water, and give one teaspoonful of this mixture at a dose. *From six to twelve months*, give two teaspoonfuls of the above mixture at a dose. *From twelve to eighteen months*, give three teaspoonfuls of the above

mixture at a dose. *From eighteen months to three years*, give half a teaspoonful of salts in two tablespoonfuls of sweetened water. *From three to five years*, give one level teaspoonful of salts in half a teacupful of water. *From five to eight years*, give one and a half level teaspoonfuls of salts in half a tumblerful (or half a breakfast-cupful) of water.

The best way to give children salts, after they run about, is to dissolve them in *hot* well-sweetened water, to which fresh lemon juice is added. Failing this, a few drops of essence of peppermint may be used as flavouring. It is much better to give two or three small doses, as above, in the day than one large dose.

Diarrhœa.—A too frequent movement of the bowels—that is, the passage of more than five or six liquid motions in the twenty-four hours, or the passage of green offensive-smelling motions—must always be looked upon as dangerous for the baby at any time, and the treatment to be indicated later should be promptly adopted in all cases.

In hot weather, or when the attack begins severely, such a condition should warn the mother at once to seek advice, and at all other times she should be urgently on her guard and her attitude should be one of strict watchfulness; and if the motions, as the result of the treatment described below, do not become normal in number and character within twenty-four hours, or if they become more frequent or the child is more upset, *at any time before this* medical advice should be promptly sought.

Causes of Diarrhœa: In the Breast-fed Baby.—Too frequent nursings which allow the stomach no time to digest the food. Indiscreet feeding in the mother, and the inclusion in the diet of indigestible articles of food, certain vegetables, or sour fruits. Her use of strong aperients. Mental upset, or sometimes the altered condition of the milk, due to the existence of the monthly period or of pregnancy. Sometimes the cause may be a chill taken by the child, especially during teething.

In the Bottle Baby.—Irregular feeding. The irritating effect of a totally unsuitable food (it is well to ascertain what the ignorant or coloured nurse has given to the child); or of starchy food given to a baby too early and before it can digest it, or excess of starchy food or this improperly cooked given to an older baby; or the use of too much of a malted food. The use of too strong a milk food,

especially in cow's-milk feeding, when usually there are curds in the motions, and accompanying fretfulness, colic or sickness. The use of food which is not *fresh*—old milk or cream which may be old when it reaches the house ; or may be kept too long or mixed with older milk, or put into an imperfectly clean jug, or not kept properly cool, at home ; or condensed milk used too long after opening. The improper cleansing of bottles and teats, which harbour sour milk. A chill taken by the child, especially during teething. From all the causes named, in the case of breast or bottle babies, the attack of diarrhœa may, or may not, yield to their correction and the lines of treatment to be indicated. For investigation and correction of the causes in the case of the bottle-fed baby, see *Home Care of Condensed Milk*, *Care of Cow's Milk after Heating*, *Cleansing of Bottles and Teats* ; and *Stomach-ache and Colic* (for ensuring the freshness of the milk or cream, and reduction of the strength of mixtures).

Infective Diarrhœa.—Diarrhœa may, however, be due to the entrance into the child's body of germs or poisons derived from *contamination of the milk*. This last type of stomach and bowel disorder, which is known as "infective," since the child is infected, and which is practically unknown in breast-fed babies, is particularly common in summer weather and in large towns, because the heat and overcrowding render impure milk much more dangerous. Such infection may occur in a perfectly healthy baby, but more usually does so in a baby with a delicate stomach and bowel tract, whose feeding probably has been a difficulty and progress often not very satisfactory.

The baby may be attacked very suddenly with continuous and severe vomiting and the passage of frequent greenish or colourless watery motions, rapid wasting, and perhaps within twenty-four hours shows all the signs of "collapse" (see Chapter X.) ; or the attack may begin more gradually with loose frequent motions, becoming greenish or a dirty brown in colour and very offensive, and vomiting ; or the child may from the beginning pass frequent small slimy motions, sometimes containing blood, with much straining. The baby in all these cases generally suffers greatly from pain in the abdomen.

Treatment of Diarrhœa in the Breast-fed Baby.—A teaspoonful dose of castor oil, whatever the age of the child, should be given and

the child should be kept very warm about the abdomen, feet, legs, and thighs. The mother's diet should be very carefully regulated (see p. 80), and for the time being all green vegetables and uncooked fruits should be excluded, and no purgative medicines should be taken.

If the baby also vomits, it will be well to replace two or three breast feeds by feeds of sweetened white of egg and barley water, or, failing barley water, white of egg diluted with sweetened boiled water; or sweetened barley water (see *Recipes*).

If the baby is not vomiting, two or three tablespoonfuls of sweetened barley water, or, failing this, of plain boiled sweetened water, should be given before each nursing.

Treatment of Simple Diarrhœa in the Bottle Baby.—A teaspoonful dose of castor oil, whatever the age of the baby, should be given, and the child should be kept very warm, especially about the feet, legs, thighs, and abdomen. *All milk foods should be stopped* for the time being, and feeds consisting of sweetened egg-white and barley water, or sweetened egg-white and boiled water, or plain sweetened barley water (see *Recipes*) should be substituted for the ordinary feeds.

However quickly the attack passes off, milk foods should be resumed very cautiously. If there is any doubt about the milk-supply, Glaxo or condensed milk should be given for a week or so. If the milk-supply is reliable the milk and cream should be sterilised (preferably in bottles) for *twenty minutes* (see p. 107) for two or three weeks; and the strength should be made weaker than the child has been accustomed to for the same length of time, and a tablespoonful of lime water should be given before each feed, even though lime water is being given with the milk.

Treatment of Infective Diarrhœa.—If the attack begins severely as above, a dose of castor oil should be given—one and a half teaspoonfuls under six months of age; two teaspoonfuls from six to twelve months—and the child should be kept very warm as above. *No food of any kind other than plain sweetened barley water or rice water should be given until the doctor sees it.* If this is impossible for *twenty-four hours*, the mother must refrain from the temptation to give the child any other food *for this length of time*. To give food, such as milk or egg-white, during this first period is to enable the germs which have got into the bowel to flourish, and therefore to

starve the child, even if it is not vomiting, when it will be made worse by and gain no benefit from the food given, is to starve the germs.

If the mother is far from medical aid and can get no doctor for several hours, the following treatment should be adopted. If the castor oil is returned, which will frequently happen when vomiting is present, four consecutive doses of salts (see *Medicine Cupboard*) should be given at hourly intervals as follows: A level teaspoonful of salts should be mixed with two tablespoonfuls of sweetened water, and two teaspoonfuls of this mixture should be given at a dose to a baby under one year of age. Three teaspoonfuls of the mixture should be given from one to two years of age.

The temperature should be taken, and, if it is high, up to 103° F. tepid sponging (see *Sponging*) repeated, will soothe the child. If it is not raised and the child's skin and extremities are cold a hot bath (see *Hot Bath*), repeated if necessary, should be given. The feet and legs should be wrapped, each leg separately, in pieces of cotton wool, or doubled flannel *up to the knees*, tied on. Thick pads of cotton wool or of folded flannel well toasted before the fire should be bound over the abdomen, and severe pain will be relieved by the application of a light linseed poultice (see *Poultice for Abdomen*); or in the absence of linseed, bran, oatmeal, or maize meal for making such a poultice, hot flannel fomentations may be applied (see *Fomentations*) and changed every half-hour.

When the child passes frequent watery motions, it should essentially have *plenty of fluid* to make up for the loss of fluid from the body, which is in itself a danger; hence frequent small drinks of sweetened boiled water should be given in the feeding-bottle. The baby is also very thirsty, and when food is withheld, such drinks of *boiled* water must essentially be given.

The child should have *plenty of fresh air*, and should be sponged at least twice a day, to keep the skin acting well.

The buttocks should be carefully sponged after each motion and carefully dried, and well smeared with sweet oil or lanoline, to prevent soreness, which is very easily produced in these cases. The napkins, which are infectious, should be disinfected as described in Chapter IV., and the mother or nurse should wash her hands after handling them, and always before handling the baby's food. It is much better, and disturbs the child less, to use pieces of cotton wool as napkins, and burn them.

If *within eight hours of giving the last dose of salts* the motions are still frequent, if medical advice is not obtainable, the mother may succeed in checking the diarrhœa, which at first it would not have been advisable to do, by giving the following medicine every four hours :—

Bismuth salicylate	5 grains
Bicarbonate of soda	3 grains
Prepared chalk	4 grains
Sal volatile	3 drops
Glycerine	3 drops
Mucilage	
Dill water up to one teaspoonful.	

A two-ounce bottle should be procured, and one teaspoonful should be given to a baby under six months. One teaspoonful and a half to a baby over six months.

A plain *starch enema* (see under *Typhoid Fever*), of which a tablespoonful should be used, and which may be repeated in a few hours, may be of assistance in checking the diarrhœa.

At the end of twenty-four hours from the beginning of the attack nourishment should be given in small quantities, of say a tablespoonful every hour. If the child vomits this, two or three or even one teaspoonful should be given every fifteen minutes or half-hour. The most suitable nourishment will be sweetened egg-white diluted with arrowroot water (see *Recipe for Egg-white Water*), which has a binding effect, or, failing this, sweetened egg-white diluted with rice water or barley water (see *Recipes*) or plain water ; or whey.

If the child becomes very exhausted, its cry becoming weaker and perhaps only a whine when disturbed, its body wasting visibly, its skin becoming harsh and cold, and its abdomen, eyes, and the soft spot on the top of the head all tending to fall in, which may happen within twenty-four hours, or earlier in a severe case, the following treatment should be adopted :—Brandy (see *Dosage of Brandy*), or, failing this, whisky should be given in warm water every two hours, and to each dose of brandy and water two drops of spirits of camphor, if at hand, should be added. As much warm sweetened water in small doses should be given as the baby will swallow ; and small quantities of the nourishment indicated should be given at frequent short intervals.

The baby should be rolled in cotton wool, each foot and leg essentially being wrapped up in a separate piece to the knee, or soft and doubled flannel, and kept lying between warm blankets with hot-water bags in a *large airy basket* in front of the fire, with the window of the room well opened, in cold or damp weather; but advisably out of doors on *warm*, dry, sunny days.

It should be sponged over with warm water twice in the day, with as little disturbance as possible. The sponging should be done quickly, and without turning the child over, by slipping a towel under it and gently rolling it on to each side. It is very essential to keep the skin, when harsh and inelastic, acting as well as possible. The baby's mouth should be carefully cleansed with warm weak boracic acid solution or boiled water.

If actual collapse (see *Signs of Collapse*) should supervene, the treatment for this condition (see *Treatment of Collapse*) should be adopted promptly and repeated as necessary. It is to be hoped that long before such arises the mother will have secured medical aid.

Convalescence after Infective Diarrhœa.—The convalescence after such attacks is very slow and prolonged, since the child's digestion remains weakened and its bowels are very easily irritated and disordered afresh. The mother in her anxiety to build up the child's strength must not forget this. To meet it and to prevent relapses the ordinary diet must be very carefully and slowly resumed, and cow's milk must be withheld for some time. It will be necessary to give condensed milk or weak Glaxo feeds, or, if these cannot be taken, partially peptonised milk (see *Recipe*) or Benger's food (see *Benger's Food Feeding*) at first. Or often a sweetened cream-and-whey mixture with lime water or the gradual addition of cream and milk to the egg-white-water feeds (see *Cream and Whey Mixture*, and *Egg-white and Cream Mixture*) will be advisable, before cow's-milk feeds are returned to. The cow's milk should be given at first in a weaker strength than the child has been accustomed to, and citrate of soda (see this) will often be ordered by the doctor to be added to each feed; and the milk and cream should in all cases be sterilised for twenty minutes.

Complete change of air to the seaside or hill districts will often be necessary to give the child a good start again, and this is frequently successful when everything else fails.

Wasting.—This is shown by the baby's *failure to gain in weight*

at each weekly weighing and to become plump and well covered as it should, the limbs especially lacking the pretty rounded form of the baby who is thriving. By a wrinkled appearance of the skin on the inside of the thighs, and often of the forehead. The skin also soon loses its elasticity and soft velvet-like feel, and the baby is often cold. The bowels in such a condition are usually constipated, and one or more hard, scanty motions may be passed daily, but sometimes they are too loose. The baby is constantly fretful and peevish, and looks unhappy.

The condition is nearly always due either to chronic indigestion from unsuitable food, which the baby cannot make use of, or to an insufficient amount of food or of one of its necessary ingredients. Much more rarely it is apparently due to an especial delicacy in the baby, which results in failure to *absorb* the food given. In a smaller proportion of cases wasting is due to some constitutional disease either inherited from the mother or father, or perhaps acquired insidiously after its birth, and such disease only the physician can ascertain, and it will be well for the child if the diagnosis be made early and suitable treatment begun.

It is perhaps difficult for the mother to realise how serious a condition wasting is for the baby, especially when accompanied by looseness of the bowels. An adequate nutrition in the first few months of life is a vitally important consideration, and is essential during this period not only to make the baby fat but to develop each function of the body healthily, including the nervous system. The badly nourished baby is too likely to grow up with some especial delicacy; it forms the habit of crying because it is never comfortable or satisfied, and often develops into a peevish, difficult child; and its nervous system, particularly in a child of nervous inheritance, is in this its all-important foundation period likely to develop unstable. Furthermore, the badly nourished baby's life is unlikely to withstand the sudden disturbances of stomach and bowels and other acute illnesses to which babies are always liable, and is hence constantly in danger. A prolonged poor nutrition in these early months, too, will often pave the way for rickets and all its evils later on.

The mother who realises the seriousness of this condition in a baby will not hesitate to *seek the best available medical advice* for the child, and she will not lose valuable time in trying the many and

various hints for feeding of friends who have brought up large families, while she grieves silently because her baby, in spite of all she does for it, does not get on.

No suggestions for the home treatment of such cases of malnutrition can be given, except to say that such a baby should be kept *very warm*, and its feet and legs wrapped up in wool or flannel, for it cannot be too often repeated that in every case *where a baby does not thrive and put on weight as it should, when its feeding is carefully regulated*, early medical advice is necessary, and that no home treatment, no innate mother-instinct, mother-love or unremittent care, nor the experience of other mothers, can safely take its place.

Such a baby, with skilful home and medical care, will often seem to get a sudden increase of digestive strength towards the sixth month, and about the time that the first two or three teeth are cut ; and from then onwards to make a new start.

A tendency to stiffness of the limbs and backward arching of the spine in a baby should always be reported to the doctor. It may be due to chronic indigestion and is sometimes associated with wasting, but it may be due to a more serious condition of the brain. A healthy baby's joints are all supple and its movements should be free and vigorous.

Rickets.—Rickets is the term applied to a constitutional disease which shows itself in various imperfections in the child's physical development, in a generally enfeebled constitution, and in the child's great liability to suffer from most and especially certain diseases.

The cause of it is *unsuitable feeding*—that is to say, a diet which does not supply the child with the essentials for its nutrition ; and while the disease is caused primarily and chiefly by this, it is further fostered by want of fresh air and proper use of the muscles. It is hence an entirely preventable disease, and yet it is one of the commonest of all children's diseases.

It occurs in a child when (1) The *fat-forming* and flesh-forming and the "fresh" elements or living properties of the food given are absent or deficient, which conditions exist when a bottle baby is reared entirely on condensed milk or patent food, or on an insufficiently nourishing cow's-milk mixture. (2) When a baby is kept too long at the breast—that is, longer than nature intended, and after the milk has fallen off in flesh-forming and fat ingredients, so that it fails to afford the child sufficient nourishment. (3) When the child's

digestive organs have been so upset by the use of too strong a cow's-milk mixture, that they remain weakened and unable to digest and absorb sufficient of the fat and flesh forming elements of the food given.

The rickety child is just a jerry-built child, with poor blood, and it may show its faulty construction in one way or another at one time or another, from its sixth month to its sixth year, or may show it in many ways ; or may collapse altogether and die, as many rickety children do, from an attack of diarrhoea or bronchitis, which would be slight in a child not so affected.

A typical case of rickets will be described—that is, a child with many symptoms of the disease ; but the mother must remember that the child may show only one of these signs, and that if this is noticed it needs prompt medical care and dieting. It can be more truly said of rickets than of any other disease of childhood that prevention is better than cure, but early cure is better than late cure.

The rickety baby in the absence of very hot weather perspires profusely, and often the pillow where its head has lain is wet. It kicks off its clothes restlessly during sleep. The movement of its limbs are not vigorous, and it often resents handling, and seems to be tender all over the body. It is, as is often seen in babies fed on condensed milk or patent foods, often well covered and puts on weight, but is soft and flabby and *pale* rather than firm and rosy as it should be. After the fifth month, when it should be able to raise itself and sit up, it shows no desire to do so, and its back forms a rounded curve when it is set up. This is because all the muscles and sinews of the back are weak and soft. The abdomen is large and “windy,” and the baby suffers frequently from diarrhoea and flatulence, or sometimes from obstinate constipation, because the muscles of the abdomen and also the coats of the bowel and stomach are flabby and soft ; and its stools are abnormal. The teeth are late in appearing, and often very soon show signs of decay. The child easily catches cold and often suffers from bronchitis and croupy attacks. It is subject to convulsions, for the nervous system is markedly unstable in rickets, and is often highly nervous, not only in infancy but in later life.

When the child begins to crawl, it easily gets tired, and its arms are sometimes bent. The ankles and wrists look swollen and the forehead is high and broad and prominent ; this does

not mean promise of an unusual intellect, but of a poor constitution. Just close to where each rib joins the breast bone in front a little knob-like swelling is often felt.

The child is late in making its attempts to walk (see *Backwardness in Walking*), and when it does its legs often become bowed out, or later its knees knock together, and this is because the bones are soft and unable to bear the weight of the body. The soft spot on the top of the head, which should have disappeared midway in the second year, is still present. The chest, instead of being broad and well developed, is narrow and long, and shows a prominence along the middle, and there is a flattening or even a furrow on either side (pigeon breast), again, because the ribs are soft and tend to fall in. This means that, since the chest does not expand properly, the lungs are not properly filled with air. Any of these bony deformities, if proper treatment is not begun, will become permanent. Rickets in a girl often proves particularly disastrous in later life, when, on account of imperfect development of the bony pelvis in childhood, it results in difficult confinements; and the child or young adult with a rickety ill-formed chest is far more likely to develop consumption than one with a broad chest and well-filled lungs.

It is perhaps during the second year that the effects of a rickety constitution are most apparent. Such a child, though it is not by any means always thin and delicate looking, is generally a constant anxiety, and it is often fretful and peevish, because it is never consistently well or robust as it should be. There is usually difficulty with its feeding, especially on introducing each new element into its diet. It has frequent attacks of diarrhoea on slight provocation, and between times its bowels are often obstinately constipated and its motions hard and pale. This last is because its liver is often affected and does not therefore manufacture its due amount of digestive juice—"bile," which is necessary for the digestion of fat; and the child has often especial difficulty in taking the fat it so essentially needs.

The treatment of this disease, as of any other established condition of malnutrition, must be left essentially to the physician; and the facts regarding it which I would impress upon the mother are, first, *how to prevent it*; and secondly, if it exists, *how to recognise it early*.

Scurvy.—If a baby, especially between the sixth and fifteenth months, cries and resents handling of the limbs, particularly the legs, during bathing or changing, scurvy may be suspected. This is a blood disease, and likely to occur in babies who have been fed on long sterilised or condensed or dried milk, or patent foods *especially*, without the addition of such fresh elements as are supplied by fresh fruit juice or fresh egg yolk. In addition to tenderness of the limbs, and a consequent disinclination of the child to use them, a swelling near a joint may be noticed, especially on the legs, or sometimes a spot resembling a bruise which cannot be accounted for may be seen. Sometimes the gums are swollen and purplish in colour, especially round a tooth or over an upper tooth which is nearly through. A little blood may be passed with the water, and the baby is often pale and waxy looking. If any one of these symptoms are noticed, medical advice will be necessary.

Thrush.—In this affection tiny white spots appear inside the mouth, which are painful and make the child fretful and disinclined for food. It is very often due to carelessness in cleansing the bottles and teats or comforters, on which some sour milk remains to set up the trouble in a *bottle-fed baby*, or in *breast-fed babies* to improper cleansing of the child's mouth or mother's nipples, and it is invariably associated with some stomach upset.

Particular care should be given to the bottles and teats and comforters. The food should be given just tepid, and no sugar should be added to the feeds for a day or two. The buttocks should be kept very clean and dry, and should be smeared with olive oil or lanoline. A dose of castor oil should be administered (see dosage of this), and from two to four teaspoonfuls of the solution of bicarbonate of soda recommended under *Vomiting* should be given three times a day.

A two-ounce bottle of the following mouth wash should be obtained from the chemist, and with a little poured out fresh each time the baby's mouth should be well wiped out with a fresh rag each time, wound over the finger, four times a day.

Borax	.	.	.	.	.	.	10 grains
Chlorate of potash	.	.	.	.	.	.	10 grains
Glycerine	.	.	.	.	.	.	30 drops
Water	.	.	.	.	.	.	1 ounce

Sore Buttocks.—Redness and soreness of the buttocks will be nearly always prevented by careful attention to the following points :—

1. The buttocks and parts should be carefully dried and powdered after bathing.

2. The napkins after being soiled should never be dried and used again. They should be washed without soda and well rinsed of soap.

3. The napkins should be examined and changed if wet, as a routine after each feed, so that the baby never remains wet.

4. The buttocks and parts should be *sponged* after each movement of the bowels.

5. The buttocks and parts should be smeared with lanoline or olive oil during attacks of diarrhœa or thrush.

6. Excess of sugar (see *Sugar*) or starchy food (see *Starchy Food*) or excess of fat (see *Additional Fat*), all of which may produce irritating motions, must be avoided in the diet.

Treatment.—On the first indication of soreness and redness lanoline should be gently rubbed in each time the parts have been sponged, and kept well smeared over them, especially in the cracks and folds, and where the parts touch each other.

From two to four teaspoonfuls of the solution of bicarbonate of soda recommended under *Vomiting* should be given three times a day, and particular care should be given to the changing and washing of the napkins. The quantity of sugar in the food should be carefully regulated, and any excess of starch corrected. The barley water may be too strong, when a little less of the barley must be used in preparation, and if malted or ordinary unchanged starchy foods are being given the amount should be diminished, and the latter should be thoroughly well cooked.

Scurf on the Scalp.—The baby's head is sometimes covered with patches of yellowish scales. These will be easily removed, as a rule, if before soaping it at the daily bath the head is rubbed over with warm olive oil; the soap should then be thoroughly removed, and a little lanoline should be rubbed into the scalp afterwards.

Prickly Heat and Nettlerash.—The baby often suffers in hot weather, and during teething especially, from irritable skin eruptions, which may consist of a crop of irritable pimples (prickly

heat), or of white wheals or white raised patches (nettlerash), both of which cause the child much discomfort.

Prickly heat may be due to perspiration from excessively hot weather, or to irritation from woollen garments next a sensitive skin, or from flea or mosquito bites, or to passing indigestion, especially during teething.

Nettlerash is common in warm or spring weather and in children with delicate skins. It seems more frequent in nervous or rheumatic or gouty children, and has, I think, often a connection with constipation. It is very often due to digestive disorder. In older children often to eating shell-fish, tinned meat or fish, mushrooms, &c., or in some children strawberries or oatmeal. Enemas will occasionally produce it, taking quinine, or, very rarely, the use of egg-white in infancy; and free perspiration; first exposure to sea air or exposure to rough winds are also sometimes factors in its production.

The baby should be clothed very lightly with a lawn slip next the skin, and during the middle part of very hot days, if the irritation is extreme, the flannel petticoat may be left off in the house and the cotton petticoat only worn, while an outer shawl ensures the baby's warmth. A thick gruel made from the finest Scotch oatmeal should be used instead of soap for washing it for a day or two, and it should be sponged, or given a bath from time to time at the temperature to which it is accustomed with water in which a heaped tablespoonful of bicarbonate of soda has been dissolved. The powder recommended for dusting the baby should be used freely all over the body, and the irritable spots should be frequently dabbed with a lotion consisting of eight parts of lime water and one part of zinc oxide. From two to four teaspoonfuls of the solution of bicarbonate of soda should be given three times a day, and a daily dose of fluid magnesia. If this is unsuccessful, a bran bath may be tried. For this a teacupful of bran should be tied up in a muslin bag, and placed to soak in the water for a few minutes before and during the time that the bath is given. Egg-white if used should be stopped.

In the case of nettlerash in the older child an attempt should be made to ascertain the cause, and avoid it. Cotton, or, much better, silk, and not flannel, should be worn *next the skin*; soap should be replaced by gruel, and intense irritation will be best relieved by

smearing on the following ointment to the affected parts, and, where possible, securing rags smeared with it to them :—

Menthol	.	.	.	.	.	10 grains
Cold cream	.	.	.	.	.	1 ounce

The child should be given a dose of castor oil (see dosage of this) or a dose of salts (see dosage of this), and the latter should be given daily while the irritation lasts. The diet, if the condition is really troublesome, should be regulated as for feverishness, no meat or eggs being allowed.

If the above ointment does not relieve the irritation, the child may be bathed in a tepid soda bath. For this see *Brine Bath*—in this case adding a teacupful of bicarbonate of soda instead of the salt, and well stirring the soda up. After the bath the child should be freely dusted with the following powder :—

Zinc oxide	.	.	.	.	1 tablespoonful
Starch	.	.	.	.	1 tablespoonful
Boracic acid	.	.	.	.	1 tablespoonful

Failing this, the boracic and starch baby powder (see *Powder for Baby*) should be used. The irritable parts may be dabbed, in the absence of the ointment recommended, with a strong solution of bicarbonate of soda; or carron oil, or cold cream or lanoline, may be smeared over them.

The child should be given a quarter of a teaspoonful of bicarbonate of soda in a tablespoonful of sweetened water three or four times a day. If the condition does not yield to the above treatment, and especially if the child's sleep is disturbed, medical advice will be necessary.

Eczema.—This, which is an inflammation of the skin, may be suspected if the skin, especially on the face and scalp, breaks out in hot, reddened patches, containing a crop of irritable pimples, which burst, and ooze, and form crusts. It is a very troublesome complaint to cure and very torturing to the child, and essentially needs medical care, since dieting, no less than suitable applications, will be necessary according to the underlying cause of the condition and nature of the inflammation.

Hard water used for bathing should be softened by the addition of the finest Scotch oatmeal or some "water softener," and a thick

gruel should be used to cleanse instead of soap. Scratching must be prevented, and this is best accomplished by safety-pinning the sleeves of the gown to its lower part, and by the use of bran or soda baths as mentioned for prickly heat; and pending medical advice by bandaging on strips of lint or rag soaked in carron oil to the affected parts.

Teething: *Eruption of the Teeth.*—The baby's first teeth are usually cut about the sixth month. The lower central cutting teeth are generally the first to appear, and next the four upper central teeth by the end of the first year; after this the two remaining lower central teeth, and the four first double, grinding or chewing teeth come; and between the eighteenth and twenty-fourth month the eye teeth on either side, above and below, generally appear. Lastly, in the beginning of the third year the four back double teeth come through and complete the first or milk set of twenty teeth. Sometimes if the baby has been thrown back by illness, or if it has been unsuitably fed and suffers from rickets, the first teeth are later in appearing and are often unduly soft, and decay very soon.

Care of the First Teeth.—It is so important to prevent decay in these first teeth that with a view to this, which is discussed more fully in Chapter XVI., they should have special care as soon as any appear. It is not easy to use a tooth-brush at first, though one should be brought into use as soon as possible; but the mouth should be wiped out, and the teeth should be cleaned at least *twice a day*, morning and evening, with a piece of soft rag wrapped round the finger-tip, and dipped into a solution of bicarbonate of soda, one teaspoonful in half a tumblerful of warm water, and the gums and teeth should be gently rubbed front and back. The prevention of decay would be still more certain if the mouth and teeth were cleansed with this solution at any time after starchy food has been taken, or when the child has been given a sweet to suck.

Signs of Teething.—Teething generally causes the baby some disturbance, though perhaps only the more delicate or nervous babies suffer severely from it. Usually the first signs are fretfulness, sleeplessness at night, and dribbling of the saliva. Not infrequently too the child has symptoms of temporary digestive disorder, such as vomiting, often with slight feverishness, and loose or not quite healthy motions; and very often it does not gain in weight as steadily as it has hitherto done, and earache is not at all uncommon.

Management of Teething.—Soothing syrups and teething powders should *never* be given to a teething child; the former especially almost always contain *opium*, which is a very dangerous drug for little children, and which, given to them in one form or another by ignorant nurses and mothers, kills a number of them every year. A dose of castor oil will often be useful if the digestion is disordered, or a dose of fluid magnesia, but for anything given to soothe the child, which, when it is very restless and its sleep is much disturbed, may sometimes be necessary, medical advice should always be sought. When the gums are swollen and reddened it often relieves the child considerably and helps the tooth through to rub over the site of the tooth with a clean huckaback towel over the tip of the finger; or rubbing the gum with the finger dipped in a little glycerine and lemon juice, or frequently mopping out the mouth with a rag saturated with quite cold water, will often give relief. The old-fashioned lancing is rarely of any use, since it is only efficacious just when the tooth is so nearly through that it would cut itself in any case, and if done earlier than this, a small hard scar is formed in the healing, which renders it still more difficult for the tooth to come through. The baby's motions should be carefully watched; and if it shows a loss of appetite or signs of indigestion, the food *strength* (not quantity) should be temporarily lessened as advised for hot weather and feverishness (which see). Chills should be carefully avoided, by not exposing the child to cold winds, damp raw weather or draughts; by avoiding perspiration from excessive clothing and hot stuffy living rooms or cold sleeping-rooms, or chilling from insufficient clothing, especially of the legs, thighs, and abdomen, or from being put down on to cold floors. Wetting of the frock through dribbling should be prevented by the wearing of efficient bibs frequently changed; and at all times during feeding or giving medicines the caution not to wet the chest should be observed.

Frequent cool sponging (see Chapter X.) will soothe the child if it is restless and the skin is hot and dry, and frequent drinks of cold boiled water should be given.

An indiarubber or ivory ring to bite often seems to gratify the child, but these should be attached to the waist to prevent their dropping on to the ground, and they should be carefully cleansed in boracic or soda water like the teats.

It is important to note that as soon as the child has one or two teeth it should be encouraged to bite on a toast crust, or given a long, hard, well-baked crust of stale bread for this purpose daily.

This is because the chewing exercise is a very necessary one for the correct development of the teeth and jaws, quite apart from its use in mincing up the food and mixing it up with the saliva, so necessary for good digestion later. It tends to produce well-formed jaws, and regular teeth and good development of the roof of the mouth, and some say tends to prevent the formation of adenoids. It most decidedly tends towards the preservation of the teeth already erupted, and therefore with these facts before her the mother will be careful to give the child such crusts to nibble; and at the end of the first year, dry German rusks (Zwieback) or "pulled bread"; and older children *hard* suitable biscuits rather than soft sweet ones, which are also inadvisable for other reasons.

Vaccination.—It is difficult for us to realise in these days what the dangers and ravages of smallpox were before Jenner's great discovery of more than a century ago; the discovery that resulted in the almost universal practice of vaccination, which, in the practically unanimous opinion of the medical profession, and of thinking people all the world over, is an efficient preventive of smallpox, and which in most civilised countries is compulsory by law. Thanks to this we seldom see smallpox to-day, and then usually only in a modified and far less destructive and dangerous form. Still cases do occur, slight in those who have been vaccinated, but in all its horror and severity and very often fatal in those who have not been; and as it is one of the most infectious of all infectious diseases, one such case before it is recognised and isolated always constitutes a great danger to any individuals who may be exposed to it. Children are particularly susceptible to this disease, and under one year of age it is nearly always fatal. Vaccination as practised to-day consists of inoculating a person with—that is, allowing the blood to absorb through a few scratches in the skin—the germs of a very mild disease which is the cow's form of smallpox. As the result of this absorption, which is shown by slight feverishness, and the formation of the well-known "spots," the blood of the person vaccinated manufactures a substance which has the power of destroying the germs of smallpox, and hence protects that person from catching it, or, if he does catch it, from having a severe

attack ; but as the substance which exists in the blood tends to lose its efficacy as time goes on, though perhaps never altogether, it is advisable to allow the blood the opportunity of manufacturing it afresh, and hence the individual should be vaccinated more than the once in infancy, preferably again at the school age, and also at any time of exposure to smallpox.

The principle of vaccination was always right, but it was not done in the best and safest way at first ; the germs used were often taken from the spots on another child's recently vaccinated arm, and again proper care was not taken to do the little operation cleanly, in the surgical sense of the word, which is *aseptic* or "germ free." Hence people were sometimes inoculated with other germs and developed other diseases or blood-poisoning, and, as a result, vaccination was looked upon as not entirely free from risk. However, as we have

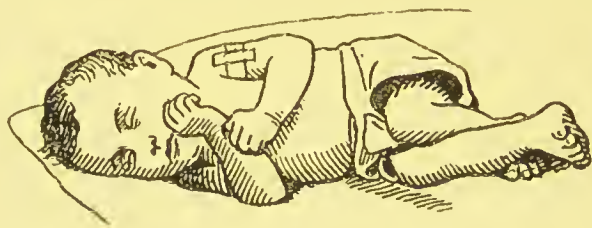


FIG. 23.—Application of vaccination dressing.

come, with the growth of bacteriology, to understand the ways of the microbes which cause blood-poisoning, and have adopted "asepsis" in the handling of all wounds however slight, we have evolved a perfectly safe form of vaccination, and we now use specially prepared "calf lymph" from germ-free sealed tubes ; specially cleanse the arm before scratching it, and keep it scrupulously clean afterwards.

Every child should be vaccinated, if it is thriving well, about the end of the third month. It is not very advisable on the whole to do it earlier than the third month, because the young baby is better without even the slight disturbance which it usually causes, nor *very decidedly* after the fifth month when the teething troubles begin, and also because the process is *much* less severe when done early than when the child is older. The doctor will delay vaccination if the child is delicate or suffering from any temporary complaint. The dressing put on after the vaccination should not be

disturbed until the doctor sees the child again, probably on the third or fourth day. The mother should, however, have ready for her own use, if the doctor's should come off, a small packet of "sterile gauze" (which is always the best dressing for any wound we wish to keep *aseptic*), a roll of adhesive plaster, and a two-inch gauze bandage. She should take the greatest care to prevent the arm getting knocked or the doctor's dressing coming off, and only wash the arm above and below it; but if the dressing does come off, as it sometimes will, the mother should scrub her hands with hot water and soap, rinse them in clean hot water, and apply a small piece of gauze lightly over the spots, then wind the bandage round the arm over the gauze dressing, and, to keep it securely in place, cut a strip of plaster about one inch wide and five inches long, and, warming the ends to make them stick to the skin, place this lengthwise along the arm over the centre of the bandage, as in Fig. 23. Vaccination shields should never be used.

Convulsions.—These may occur at the beginning of an illness; in connection with an attack of indigestion, or after a severe bout of stomach-ache or *carache*; as the result of constipation or during the disturbance and feverishness due to cutting a tooth, and they are very common in rickety babies. They are rarely fatal from these more common causes, so that the mother need not be alarmed, though she should adopt prompt treatment and send for the doctor.

The fit may be preceded by some twitching of the muscles of the face or limbs, and the thumbs may be noticed to turn in over the palms. During the fit the baby stiffens itself and looks bluish, its eyes are fixed sometimes upwards, and it ceases breathing for the time being.

It should be placed at once in a hot bath (at a temperature of 100° F.) with the water just comfortably warm *to the elbow* if a thermometer is not to hand; and a sponge or folded cloth, wrung out of cold water to which ice, if any is available, has been added, should be applied to its head and re-wrung from time to time. The baby should remain in the bath for five minutes, and then be rolled in a warmed blanket and kept lying on its side. If another fit occurs, it should be put into a hot bath again for a few minutes into which a heaped tablespoonful of mustard mixed with a little tepid water has been stirred.

If the baby is constipated, an injection of half a teaspoonful of glycerine in a tablespoonful of warm water should be given in order to move the bowels quickly. The child should be wrapped in a warmed blanket after the second bath and kept lying on its side in its cot, with hot bottles round it. Cloths should be wrung constantly out of cold water and kept over the head. If the doctor cannot arrive for some hours, a dose of castor oil should be given (see *Dosage of Castor Oil*). Brandy should never be given for convulsions.

If the fits *continue to occur* in such circumstances, or if they occur in a new-born baby during the first few days of life, ice should be procured, if possible. An ice-bag (see *Ice-bag*) should be filled very loosely and applied gently over the head like a cap, and lightly secured to it with a folded handkerchief; and the baby should be kept very quiet and warm as above, though closely watched. The following mixture may be obtained from the chemist, and one teaspoonful given, repeated *once* in an hour if the fits are still occurring:—

Bromide of potassium	.	.	.	.	12 grains
Sal volatile	.	.	.	.	12 drops
Syrup	.	.	.	.	20 drops
Water to make	.	.	.	.	1 tablespoonful

To a baby over six months of age, one teaspoonful and a half may be given at a dose.

CHAPTER X

RECOGNITION AND MANAGEMENT OF COMMENCING ILLNESS AND HOME NURSING

“ When I was sick and lay a-bed,
I had two pillows at my head,
And all my toys beside me lay
To keep me happy all the day.”

—R. L. STEVENSON.¹

THE mother who can recognise and rightly handle commencing childish ailments, which are often so short and sharp, will comparatively rarely have serious illness among her children. Prevention is better than cure, but early cure is much better than late cure, particularly in the case of children, and if mothers will only realise this they will not often lose valuable time in adopting home treatment until the child is ill enough to call in the doctor. The books which describe home treatment of disease, like the multitudinous patent medicines on the market, are responsible for much serious illness, and not infrequently for the deaths of children, and therefore such treatment for any of those conditions which might essentially need medical discrimination and care will not be described in this book.

Mothers should never seek medical advice from a chemist or a trained nurse. No mother or chemist or nurse has, in a large number of cases at any rate, the necessary knowledge upon which to diagnose symptoms and ascribe a cause to them, which is the first essential in any treatment. Chronic indigestion, constipation, wasting, eczema, coughs, worms, restlessness and sleeplessness in teething babies, and continuous colds or anæmia are not suitable cases for indiscriminate drugging.

I would especially caution mothers against the common practice of keeping old medical prescriptions and using them repeatedly

¹ R. L. Stevenson, “A Child’s Garden of Verses”: The Land of Counterpane (Longmans’).

for the child on subsequent occasions, when its condition appears to them to be the same as that for which the original treatment was prescribed. An entirely different condition may underlie the symptoms; and also many drugs, such as grey powder and calomel, and phenacetin powder, while they are often invaluable drugs in infantile disorders, *in the doctor's hands*, are unsuitable and harmful to the child for frequent use at home. Paregoric and chlorodyne, which contain opium, and should never be used by a mother for her children on her own responsibility, may easily kill a young child. The disadvantage of the indiscriminate use of "opening medicines" is referred to under *Constipation*.

No mother, also, should allow her nurse, however experienced in the handling of children, to administer medicine or other treatment to her children, since such is frequently productive of much harm and a potent cause of long-continued indigestion and constipation. The responsibility of a child's good health is the mother's affair alone, and all suggestions emanating from friends or nurses, as to details in the child's management, must be subservient to her own *informed* good judgment and her absolute authority. She has when in doubt but one chief, her doctor, in whom when once entrusted with the health of her child, she must trust wholly, and to whom she cannot be too loyal.

It is always wise when sending for a doctor by messenger, however hurriedly, to *write a note* stating briefly what the symptoms are and how long they have lasted.

It is important to realise early that a child, especially a young child, *is unwell*. The several points on which the mother may best establish this are discussed in the section on *Recognition of Commencing Illness*, and the mother who realises the importance of it will rely only upon her own observations, and not upon the statements and observations made by servants. I cannot imagine that any mother would be rendered nervous and over-anxious, or would worry unduly, because she trained her eye to be watchful, but rather it would seem to me that her very knowledge of how to ensure the child's greater safety and prevent its incurring unnecessary risks would bring her a greater peace of mind.

Children can give us little information about themselves, and symptoms which are full of significance to the trained eye and mind may be overlooked by the mother when a child is ill, but not very

obviously distressed. *A slight cough* and feverishness, which seems as though it would yield to a few doses of "cough mixture" or rubbing with camphorated oil, may be early pneumonia, for which the cough mixture is the worst possible treatment, or bronchitis, which always requires most careful treatment, in a young child; or it may be the first symptom of measles or whooping-cough. *A sore throat*, which may always be suspected when a little child refuses its food, without any other obvious symptom, may be diphtheritic, and the child who runs about so affected and untreated incurs a serious risk of sudden heart failure; or it may be the first symptom of an attack of rheumatic fever, where again rest no less than treatment is essential for the heart, which is always affected by the rheumatic poison. Repeated sore throats are often due to rheumatism, and *growing pains* are also due to this, and have no connection with growing, and heart disease frequently arises in childhood quite unrecognised at the time, in a child who suffers from such throats and so-called growing pains.

Croup may mean and very often does mean the most serious and rapid form of diphtheria, and should therefore never receive home treatment, except such as is adopted for the child's relief pending the doctor's arrival. *Diarrhœa*, which can never be neglected in a baby, and especially in summer weather, may eventuate in a day in a critical attack of acute infantile cholera, or, if not promptly treated, in a chronic and most intractable form of bowel trouble, which, if it does not threaten the baby's life, seriously affects its nutrition and development, throws it back for months, and often leaves it the legacy of a weakened bowel and faulty digestion to menace its health during childhood. *Earache* also requires early medical care, with or without the slightest discharge from the ear. Permanent deafness is one of the commonest results of home treatment or no treatment here, and a grave form of abscess and inflammation of the brain, one which requires immediate operation to save life, and a subsequent painful daily dressing for the child, frequently arises quite suddenly when an *ear has been discharging*, often without pain, and with no other symptom to arouse anxiety.

Sore and discharging eyes in an infant, if not medically treated immediately symptoms are noticed, may result, as frequently happens, in loss of the child's sight.

The mother is well armed who understands broadly the pre-

ventable causes of disease, and knows how to ensure her children's health and good development; but she needs besides to know how to recognise commencing illness; how to first treat childish accidents; and, as she will often nurse her own children during illness, she should be familiar with the principles of nursing.

The Temperature.—Every mother should possess a clinical thermometer (see Fig. 24), one which “magnifies,” as shown in the figure, or not, as the mother prefers; and is “certified,” and which “registers” in from one and a half to three minutes. Looking at the thermometer, the mother will notice that it shows a fine silver streak along its centre; also on one side a graduated scale consisting of long lines with intervening shorter ones; and on the other side, opposite to certain of the long lines, some printed numbers: 95° F., 100° F., 105° F., and 110° F. The intervening long lines which

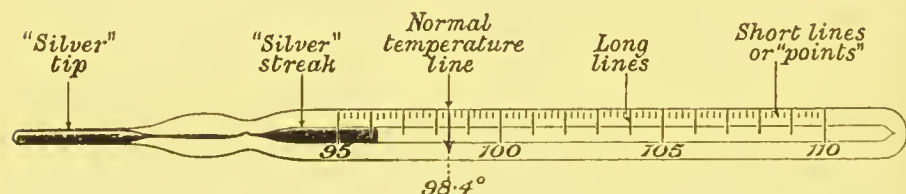


FIG. 24.—Clinical thermometer.

are not numbered are understood to correspond with the intermediate numbers 96° F., 97° F., 98° F., 99° F., &c., which are not printed. Four short lines will be seen between each pair of long ones, and these are known as “points,” and are counted as “point 2,” “point 4,” “point 6,” and “point 8.” To read the thermometer the position of the end of the silver streak should be noted in regard to these long and short lines. Thus if the streak ends at the third small line between the numbers 99° F. and 100° F., the temperature is “99° point 6,” written “99.6°.” In Fig. 24 the streak ends at the first small line between the numbers 96° F. and 97° F., and therefore the temperature shown there is 96.2°. A very little practice makes the reading of the thermometer quite simple and rapid.

To use the thermometer it should first of all be “shaken down,” by taking the point of the glass opposite to the silver tip firmly between the fingers and shaking it downwards and outwards with a quick strong movement of the wrist clear of the clothes or other

objects. It must be shaken down sufficiently for the silver streak to end just below 95° F. The normal temperature of the body is 98.4° F. The temperature may be taken in the mouth, armpit, groin, or bowel. Until the child is about two years of age, it is best taken in the bowel; after this it may be taken thus or in the armpit or groin until about the fourth or fifth year, when it may be taken in the mouth. When taken in the armpit, the mother must be careful to dry the spot first and see that the clothing does not intervene between the skin and the thermometer, and that the arm is brought well over the chest; when taken in the groin, to see that the leg is drawn well up over it on to the abdomen. In the mouth the tip of the thermometer should be slipped well under the tongue and the mouth kept well closed. When taken by the bowel, the child should be laid on its side with its back to the mother, the silver tip of the thermometer dipped in sweet oil and inserted just inside the opening of the bowel, and the thermometer held the whole time while the ankles are grasped and the legs held upwards out of the way with the left hand. Any thermometer which registers up to three minutes should be left in position for five minutes by the watch, in the mouth or bowel, and for ten minutes in the armpit or groin. After reading the temperature the thermometer should be washed in warm (never in hot) water and returned to its case; it is a delicate thing and very easily broken. It is often the greatest help to the physician if the temperature is taken twice a day (or oftener if desired), in the morning and evening at the same hour each day, and entered on a temperature chart together with the pulse rate and other details described later. These charts, of which a model is shown in Fig. 25, can be bought very cheaply from any bookseller or chemist; and the mother will make a dot in the square opposite to the numbered degree on the chart, corresponding to the temperature, which she wishes to record, or dividing the little square in her "mind's eye" into quarters will make a dot at such a position *between the printed numbers* as will represent .2, .4, .6, .8, as the case may be. Sometimes these divisions are indicated by five dots or lines on the chart, and she will in all cases connect the dots by thin strokes as each fresh entry is made.

Sponging.—This is often most invaluable to reduce fever; to soothe the irritation of the skin during measles, chicken-pox, scarlet

fever, &c. ; and also for well babies, when used once or twice a day in hot weather, it has a wonderful effect in quieting restlessness and producing sleep. A basin of tepid water containing a little vinegar, toilet vinegar, or eau-de-Cologne should be used, the child stripped, laid on a blanket, and every part of the body, but especially the chest and abdomen, sponged in turn, with a soft, well-moistened sponge under a blanket, for about ten minutes or a quarter of an hour. After this a clean, aired, and warmed night-gown should be put on, and the child's feet, hands, and skin generally felt to see that they are warm ; if not, a hot-water bag should be put to the feet.

A Cold Bath.—This will rarely be used as a means of reducing temperature in a baby, but the doctor may order one for older children, when the temperature runs high during an illness. The use of the bath thermometer is essential here as in all bathing of young children. A slop pail should stand near the bath in readiness for the water which will have to be baled out as the cold is added. The child should be placed in the bath at 95° F., and cold water gradually added to reduce the temperature to 75° F. It should not remain in longer than ten minutes, and should be vigorously rubbed the whole time. The temperature should be taken as soon as the child has been dried and clothed to see the effect of the bath, and its feet and hands should be tested from time to time to see that they are warm. A hot-water bag should in any case be placed at the feet and an extra blanket added.

A Hot Bath.—This is often an invaluable measure in acute diarrhœa, pneumonia, or any other condition where the child's vitality has become very low. It should be put into the bath at a temperature of 105° F., and kept there for five minutes, the feet and hands being rubbed meanwhile.

A bath, rather less hot than the above—that is, a *warm bath* at 100° F.—is very useful during a bad attack of colic, or during a convulsion, or an attack of croup.

A Hot Mustard Bath.—The efficacy of a hot bath is much increased by the addition of mustard, and in cases of "*collapse*" (see *Collapse*) where the child's condition is very urgent, the mustard bath proves a very valuable measure and means of stimulating the heart and breathing. A heaped tablespoonful of mustard mixed with a little tepid water should be stirred into a bath of water at a temperature of 100° F. The child should be immersed. A little hot water

should then be added, to bring the bath up to not more than 105° F., and the child may be kept in until the mother's arms begin to tingle, or for a few minutes.

A Cold Wet Pack.—This will often be ordered as a means of controlling high fever. A mackintosh should be spread over the bed, and the child's body wrapped in a large turkey towel wrung out of tepid water (or cold water, if the doctor orders it). The towel should be applied round the child from the neck downwards and should stop just above the knees. The feet should rest against a hot bag, and the child should be covered with a blanket. The application tends to become warm, and hence, after about ten minutes, more cold water must be sprinkled all over the towel, or it must be quickly removed and a fresh towel reapplied, all precautions being taken not to expose the child's body and produce chill. The mother should take the temperature in about ten minutes, and the degree to which the temperature is to be reduced, as also whether the child is to remain in the pack for half-an-hour or more, or whether it is to be repeated at intervals, will depend on the doctor's instructions. In all cases of severe illness, where a reduction of temperature is brought about by cold baths and cold packs, there is some risk of "*collapse*"—that is, sudden lowering of the child's vitality; and hence warmth must be ensured by rubbing during the bath, and by blankets and hot bags used afterwards or during a pack, and the mother will do well to give the child a drink of warm broth or beef-tea, and to have at hand some good brandy, and administer this if it should remain cold, shivery, bluish or pale after the treatment.

Brandy Dosage.—*To a baby under three months give*, and repeat if necessary in two hours, 5 measured drops in a teaspoonful of warm water. *From three to six months*, 10 drops in a teaspoonful of water. *From six to twelve months*, 15 drops in two teaspoonfuls of water. *From twelve to eighteen months*, 20 drops in two teaspoonfuls of warm water. *From one and a half to two and a half years*, 30 drops in three teaspoonfuls of warm water. *From two and a half to five years*, one teaspoonful in a tablespoonful of warm water.

A Hot Pack.—This is often ordered in cases of inflammation of the kidneys, and for this the child should be wrapped in a blanket from chin to feet, wrung out of water not too hot to comfortably

bear the back of the hand against. It should be wrapped in a dry blanket over this, laid on a mackintosh, and covered by a second blanket, and the temperature should be taken every quarter of an hour to see that it does not go up too high. The perspiration should be wiped from the head and face as it collects, and as the child will be very thirsty if it perspires freely, plenty of water or lemonade or other suitable drink should be given from time to time. The doctor will give instructions as to how long the child is to remain in the pack.

The child should be quickly sponged over with warm water after it, and a clean, warmed night-dress put on.

An Ice-bag.—This applied to the head or nape of the neck is often used in cases of very high temperature, or brain disease, or injury. The correct thing may be bought from the instrument-maker, or an efficient substitute may be made in an emergency if a waterproof sponge-bag is half filled with bits of ice split off from the block by a stout hatpin or darning needle, or meat skewer, and the bag tied securely round its neck.

Administration of Medicines.—There is not much difficulty in giving medicine to a baby. It should be given in a teaspoon, and powders should be mixed with a teaspoonful of water or food. The child should be held as for feeding, half lying and half sitting on the left arm, the tip of the teaspoon should be placed well on to the front of the tongue, and a few drops of the fluid allowed to pass slowly back over it, this causes the baby to swallow, and then the remainder may be tilted by degrees on to the tongue between the swallowings. When the child is older and running about some opposition is usually made, and if it absolutely refuses its medicine it should be rolled in a large towel, securely pinned, and if it will not open its mouth the nose should be gently pinched for a second or two, when advantage should be taken of the moment when it opens its mouth to breathe to administer the dose. Medicine is easily and quickly given in this way, which disturbs the child far less than prolonged efforts of coaxing or scolding, and the method indeed may often be surprisingly soon discontinued, for the child soon learns to accept the inevitable. Medicines mixed up at home should always be made as palatable as possible—that is, well sweetened; and in the case of older children a drop of cochineal will often with advantage be added; and after a dose of castor

oil or cod-liver oil, the mouth should be well wiped out with a moistened rag, and the nose firmly held during administration.

Injections.—Injections into the bowel, in order to effect a movement, are often useful in illness, and will often be ordered, though they will never be used, for the cure of constipation, save in exceptional cases, in an otherwise healthy child. They may consist of warm soapy water, of salt water (a teaspoonful of salt to the pint of water), or of warm olive oil (warmed by standing the oil in a cup in a basin of hot water). About two tablespoonfuls of fluid should be used for the baby; about four or five tablespoonfuls for a toddler; about a teacupful for a child from three to five years of age; about a breakfast-cupful from five to eight years; and after this from two to four breakfast-cupfuls (that is, a pint to a quart). Fluid injected into the bowel should always be used just comfortably warm (or 100° F.). A glass syringe (see *Medicine Cupboard Requisites*) may be used during the first two or three years, and after this an ordinary Higginson's enema syringe, but a *short indiarubber bulb syringe* should never be used. The child should be laid on its left side with its lower part resting on a mackintosh or thick folded towel, with the legs drawn up towards the abdomen. The syringe should be worked once or twice to send the fluid through it and expel all the air, and then the tip should be lubricated with sweet oil and gently *insinuated* into the opening of the bowel. The Higginson's syringe must be used with great gentleness, especially in the case of the young child. The fluid should then be injected very slowly, with short pauses between each squeeze of the bulb.

Nutrient Enema.—Sometimes when the stomach is very much disordered, or in other cases where food cannot be taken by the mouth, feeding by the bowel is ordered. The nourishment then may consist variously of completely peptonised milk, or this with whites of eggs, Benger's food, beaten-up egg, meat juice, gruel, &c., and is given with or without brandy, as a rule in small quantities of from one to four ounces at long intervals of several hours. Salt and bicarbonate of soda solution will usually be added according to the doctor's instructions. To give such an injection the bowel should be emptied by an ordinary enema about half-an-hour previously; the child should lie on its side with the hips raised by one or two pillows placed under them. The food, prepared at 100° F., should

then be *very slowly* run in *with a tube and funnel*, as described under *Irrigation*. The great essential is to get the patient to retain the injection. The tube must be withdrawn, either so slowly that the child is unaware that it is being removed, or very quickly. The buttocks should be well pressed together over the opening of the bowel, and the child should be kept very quiet in the same position, with its attention diverted to prevent the return of the fluid.

Irrigations.—The doctor will often order for the treatment of obstinate constipation, and for some other bowel complaints as well, a daily “high irrigation” of the bowel, and as this is one of the most satisfactory methods of treatment which we have at our disposal, it is well worth the mother’s while to be able to carry it out efficiently. The doctor will advise her where to get the special little apparatus (see Fig. 26), which consists of a small glass funnel to which is attached a long piece of rubber-tubing, with which again is connected a shorter rubber tube with a pointed tip containing an eye, for insertion into the bowel. This injection is often best given in the evening after the child is undressed, and, if oil is used, a napkin should be worn to prevent soiling the bed-clothes during the night. The child should lie on its left side on a mackintosh with one or two pillows under the hips, and the fluid, which may be water with or without salt, or with boracic acid or some other drug added, or olive oil, should be ready in a jug, just comfortably warm (or 100° F.). It should be run through the apparatus before the injection is given to remove air. The object of this irrigation is to throw the fluid high up in the bowel, and this means inserting the rubber tube about eight to nine inches up the bowel. This can be done quite safely if gentleness is used and the instructions are carefully followed. With the young child who cannot be trusted to keep still, two people will be necessary—one to control the child, and the other to manage the irrigation. The rubber tip, oiled, should be passed just within the opening of the bowel; the funnel, raised to a height of two feet, but not more, above the child’s body,

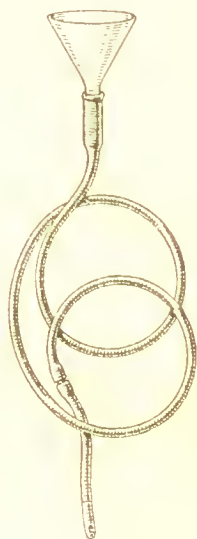


FIG. 26.—Irrigation apparatus.

and a little of the fluid poured into it from the jug, and while it is flowing in the tube should be pushed a little further on. Each time more fluid is poured in, the tube, for which it makes a way, should be gently pushed on, until it has gone in about nine inches.

Breathing.—The number of breaths drawn in a minute in a healthy subject is always about the same, except when the breathing is quickened by exertion. The rate in an adult is about eighteen breaths in a minute. Newly-born babies breathe much quicker, about forty-four breaths a minute; this gradually slows down, till at a year old there are usually twenty-eight breaths a minute, and by the end of the fourth year about twenty-five. In pneumonia, bronchitis, and other chest troubles, and in diphtheria of the windpipe, the breathing becomes quicker, in many forms of heart derangement, and to a slight extent always in feverish conditions.

The mother should count the breathing by sitting with a watch (with a "seconds' hand") in her right hand, and the other hand on the child's chest or abdomen, and counting the movements in one minute; each time the chest or abdomen rises a breath is drawn in. The breathing should be taken morning and evening at the same hour each day, and recorded on the temperature chart in the space marked "respiration."

Signs of Difficult Breathing.—It is important for the mother to recognise the signs of difficult breathing, in a baby especially, for such a condition, *which may arise insidiously, urgently needs a doctor.* The breathing rate is increased and often accompanied by a little grunting sound. There is an opening and shutting of the nostrils, and if the chest is uncovered it will be noticed to heave somewhat with each breath; and the hollow at the root of the neck, in the middle, just above the breast-bone, is seen to be drawn in deeply with each breath; and also the spaces at the sides of the body between the lower ribs. A bluish colour will probably be seen in the finger nails, lips, ears and face generally. This often occurs in pneumonia and diphtheria, and *may arise suddenly or gradually and unsuspectedly in a case of bronchitis or croup*, which has not been thought serious enough to call in a doctor for.

Treatment of Difficult Breathing.—If the above signs are noticed coming on suddenly in the course of an illness such as pneumonia or bronchitis, the doctor should be sent for at once, and the child should be put into a hot mustard bath, and kept there till the

mother's arms begin to tingle, or for three or four minutes. A folded cloth or a sponge wrung out of cold water should be applied to the head, or the head should be sponged with cold water outside the bath, the cold water being allowed to escape outside this. A dose of *sal volatile* in water according to the child's age (see dosage) should be given and repeated if necessary in twenty minutes. Brandy should never be given. After the bath the child should be wrapped up warmly.

For the treatment of difficult breathing, due to an obstruction in the air passages, such as in croup, diphtheria or choking, see under these headings.

Sal Volatile Dosage.—*Up to three months*, give three measured drops in a teaspoonful of warm water; *up to six months*, five drops; *up to one year*, seven drops. *From one to two years*, ten drops in two teaspoonfuls of warm water; *from two to three years*, fifteen drops in three teaspoonfuls of water; *from three to five years*, twenty drops in a tablespoonful of water; *from five to eight years*, thirty drops (half a teaspoonful) in two tablespoonfuls of water. Over eight years a teaspoonful may be given in four tablespoonfuls (an ordinary wine-glass) of water.

The Steam-tent.—This is often an invaluable aid in many childish ailments. It will be useful in cases of simple croup, diphtheria, bronchitis, measles, where the cough is hard and troublesome, and sometimes in whooping-cough and pneumonia. The tent is best made by arranging two draught-screens round the head of the child's cot, so that both meet behind the centre of the head of the cot. A draught-screen will always belong to the nursery, and a second if not in the house can be borrowed, if the case is not infectious. Sheets should be draped over the screens to form the sides of the tent, and another sheet thrown over the tops of the two screens to make the roof (see Fig. 27). Failing screens, one or two opened umbrellas may be stood upright in the cot and attached to the sides, and a sheet should be thrown over the tops and sides, leaving one side open towards the fire or spirit-lamp whence the steam may enter the tent. Four stair-rods lashed to the sides of the cot at each corner, a sheet being thrown over as roof, will make an efficient tent, and again one side should be more or less open—that is, the sheet only allowed to fall down a short distance so that the steam may enter the tent. The steam must be supplied by means of a

steam-kettle, *i.e.* a kettle with a very long spout, which can be obtained from a chemist or ironmonger. This must be filled with boiling water, and kept boiling on the fire, the cot being drawn within reach of the fire, or else the kettle should be placed on a spirit-lamp *on a tin tray* standing on a chair or stool *below* the level of the cot. *Boiling* water should be added to the kettle from time to time as necessary.

The spout should be directed towards the interior of the tent in such a way that the jet of steam is not near enough to the child to

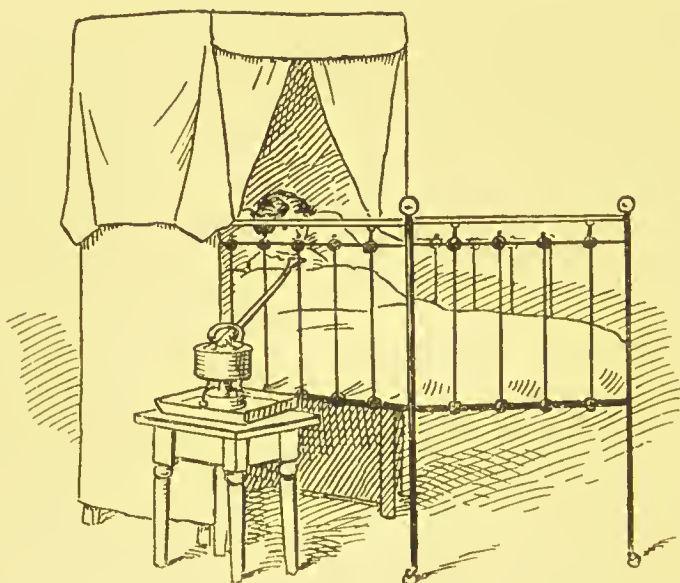


FIG. 27.—Steam tent and kettle.

come in contact with its arms or legs when tossed about, or a serious scald may result. The doctor will usually wish the child to be kept in the tent continuously, with occasional airings: sometimes only at stated intervals; when the steaming is over, the spout of the kettle should be drawn away, the roof of the tent removed and fresh air admitted. It is very important when a steam tent is in use not to allow the temperature to fall either during the night or day, as if this happens the child is very prone to take a chill.

Sometimes the doctor will order the addition of fifteen drops of creosote or turpentine, or from half to one teaspoonful of eucalyptus oil or carbolic acid to be added to each pint of water in the kettle.

Sometimes a *calomel fumigation* will be ordered. For this the calomel powder must be burnt just outside the tent so that its fumes enter it. This may be accomplished by placing it in any tin receptacle, such as a tin cup or tin plate, on the flame of a spirit-lamp; or it may be held in a kitchen spoon over the flame of a spirit-lamp or over an ordinary paraffin lamp; or else in a tin-lid, or tart-tin balanced on a broad toasting-fork, or held by a pair of pincers, over the flame.

The Pulse.—It is useful for the mother, and indeed for everybody, to know something about the pulse. The physician learns after training and a good deal of experience to discover many valuable points from “feeling it,” but the mother may learn to appreciate at any rate two: its *rate* and *strength*. The pulse is the heart-beat, felt lower down, as the finger presses against a particular artery at the wrist. In health it is a strong, steady, regular beat, occurring, like the breathing, a definite number of times in a minute. In a tiny infant the pulse beats about 130 times a minute; during later babyhood it is about 120; during the second and third year about 105; at the fourth year 90 to 95; after that, at about eight or nine years it reaches very nearly the adult rate of 82. The pulse is felt by grasping the wrist across its front, placing the thumb at the back of the little finger side of the wrist, and the pads of the first and second finger-tips lightly on the artery about an inch above the ball of the thumb, and in a line with the middle of the ball of the thumb (see Fig. 28). Each pulsation against the finger-tips should be counted until one minute is completed by a watch fitted with a seconds’ hand; and during the nursing of a case this rate should be taken night and morning at the same hour, or oftener if necessary, and entered on the temperature chart in the space marked “pulse.” In feverishness, difficult breathing, severe pain or nervousness, the pulse rate is increased. And in cases of extreme weakness or “collapse” or “shock,” it is often still increased, *but very weak*, and sometimes cannot be felt, or perhaps only a beat now and then.

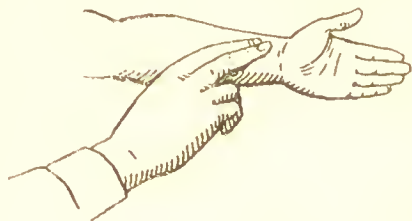


FIG. 28.—Feeling the pulse.

Signs of Collapse.—In such cases the pulse is weak and rapid

and may be imperceptible. The child often lies on its back, with the face, which may be very pale, or show a greyish tinge, turned upwards. The feet and hands and skin are *cold*, and there may be a cold sweat. The child may be unconscious, or may appear drowsy and indifferent to those around it, and only whine if disturbed. The soft spot on the head, in a baby, is very sunken forming a hollow there, and the child may scarcely seem to breathe.

Treatment of Collapse.—If such a condition of affairs as that described above arises suddenly in illness, such as an acute attack of summer diarrhoea, the mother should at once send for the doctor, and meanwhile adopt the following treatment. Place the child, without raising it into a sitting position, in a hot mustard bath—a heaped tablespoonful of mustard; and water just comfortably warm to the back of the hand, to begin with; a little more hot water being added after the child has been immersed. Remove the child from the bath when the mother's arms begin to tingle, or in three or four minutes. Give a dose of sal volatile in warm water (see *Dosage of Sal Volatile*), or, failing this, of brandy or whisky in warm water, containing, if such is at hand, three drops of spirit of camphor (see *Dosage of Brandy*). If the child makes no attempt to swallow the first few drops of sal volatile or brandy, inject double the dose suitable for its age of brandy with six drops of spirit of camphor in a couple of tablespoonfuls of warm water very slowly, *by the bowel*. If the child does not improve after this, add more hot water to the mustard bath and wrap it in a blanket wrung out of this, comfortably warm to the back of the hand. Prepare as soon as possible a salt solution consisting of a large breakfast-cup of comfortably warm water containing half a teaspoonful of table salt. Inject this *very slowly* into the bowel, using an "irrigation" apparatus, if one is at hand (see *Irrigations*), or, failing this, a syringe.

The Throat.—The throat requires treatment in cases of inflammation of the tonsils, and very essentially in cases of diphtheria and scarlet fever; and the doctor will order variously *gargling*, *spraying*, *syringing*, *painting*, "*mopping*," or *irrigating*. *Gargling* will often be used in older children, especially in cases of tonsilitis; but spraying, syringing, painting, and mopping only will be suitable for young children, and in all cases where it is essential to treat

the throat very thoroughly. For *irrigation*, for which an apparatus similar to that used for irrigating the bowel will be necessary, and also a special position of the child, the doctor ordering it will give the mother special instructions. There is only one way to effectually treat the throat in any way in the majority of young children, who naturally rebel, and that is to wrap them in a large towel or cot sheet, which confines the arms and legs, and which is securely fastened with safety-pins (this can be dispensed with surpris-

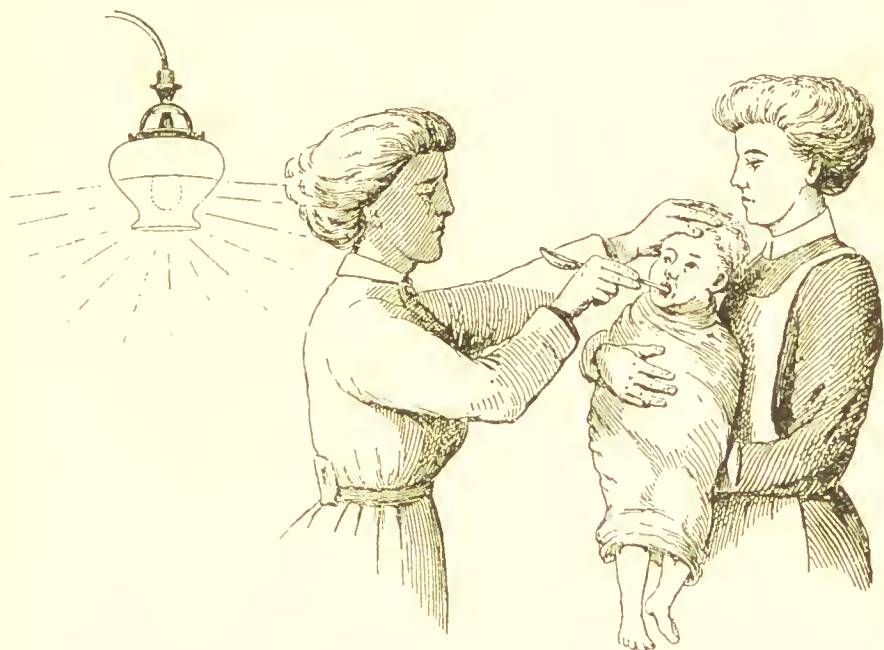


FIG. 29.—Treatment of the throat.

ingly soon, as the child gets accustomed to the treatment); and when about to begin the treatment to keep the mouth open by slipping in a small cork, or part of a large cork, to which a long piece of string is attached, on one side of the mouth *between the back teeth*. In scarlet fever such efficient treatment of the throat often means the prevention of subsequent ear trouble, and in diphtheria perhaps the child's life; hence the importance of being able to carry it out effectually, as one never can with a kicking and struggling child. If the child is not suffering from diphtheria, *when it will never be allowed to sit up*, and if it is not too ill to be

moved from its bed, the most convenient way to spray, syringe, paint, or mop the throat is to get an assistant to hold the child, secured in the towel or sheet, with its back up against her left breast, and its head resting against her left shoulder. The mother should stand or sit, according as the assistant stands or sits, in front of and facing the child, with a good light *above and behind her right shoulder*, for it is of no use to attempt to treat a throat in the dark, and only thus will a clear view of the back of the mouth and throat be ensured (see Fig. 29). She must open the mouth by holding the nose, or, as the child cries, slip in the cork and carry out the treatment.

If the mother has no assistant, she will best manage the throat treatment as follows. The child should be secured in the towel or sheet. The mother should have it on her left arm on the lap. The light should be *to her right and in front*, where it will best shine into the child's mouth. She should steady the head with her left hand, and carry out the treatment with her right hand.

To Treat the Throat with the Child lying down.—In cases of diphtheria or others, where the child is too ill to sit up or be removed from its bed, the throat treatment should be carried out as follows. The child's arms should be pinioned by a securely pinned towel or cot sheet. A good light should be arranged, stood or held *behind the mother's left shoulder*, as she sits on a low chair or kneels by the cot-side. The child's head should be brought to the edge of the pillow and bedside, so that its mouth is turned downwards over a basin, and the treatment should then be carried out. The mother should, in cases of diphtheria or scarlet fever, be careful to keep her mouth closed or turned away if the child coughs and sputters.

Painting will be effected with a special brush. *Mopping* will be best managed by the mother if she ties a piece of cotton wool securely over a pencil end, or tears a strip of *lint*, or, failing this, of doubled rag about an inch wide and a quarter of a yard long, and winds this round a pencil. Beginning at the unsharpened end and well covering it with a couple of thicknesses, the lint should be wound up the pencil, well covering each turn by the next. The covered blunt end should be dipped in the fluid, and the throat should be well wiped with this, the end of the lint

being held firmly in the hand with the pencil meanwhile. The wool, lint, or rag should be burnt at once. *Syringing* (as of the nose) is best done with a *rubber bulb or ball syringe*, which should have a *short* narrow nozzle. This should be passed into the mouth between the back teeth, and the child's head should be bent forwards over a basin if sitting up, or allowed to hang down over a basin if lying down, to prevent the fluid going down the throat.

Spraying will be effected with an ordinary throat spray, and in this case the spray should be directed straight through the open mouth towards the back of the throat. It is well to be methodical in mopping or spraying a throat—that is, to begin always at the left side, pass to the middle, and then on to the right side, and thus no part will be missed.

Syringing of the Ear.—Syringing of the ear will often be needed for earache or discharge. The young child will usually require at first to be held and secured as for throat treatment, and a basin should be pressed against the neck, under the ear, to catch the fluid. A soft indiarubber bulb ear syringe should be used (never a glass or metal syringe), and the temperature of the fluid ordered should be just comfortably warm to the back of the hand. The upper part of the ear should be gently pulled upwards and backwards, in order to straighten the canal, and the tip of the syringe should be inserted only just within it. The syringing should be very gentle; the ear is at all times very sensitive, and when inflamed excessively so. At first only a few drops should be injected to accustom the ear to the fluid, and at no time should the stream, which should be injected *in an upward direction* against the roof of the ear passage, be forcible or sudden; intense pain is frequently so caused quite unnecessarily. The ear should be carefully dried afterwards with a little cone of cotton wool.

Douching of the Nose.—This, or syringing, will sometimes be ordered in cases of scarlet fever or diphtheria, and in others of continuous colds and unhealthy nose and throat conditions. A nasal douche will be required. The child should sit *forwards*, or lie, bending the head, or hanging it downwards over a basin. It should be instructed to keep the mouth *wide open* as the fluid passes in through one nostril and out at the other. The douching, or syringing, should be done with extreme gentleness, *the stream never being forcible*, especially in cases of scarlet fever and diphtheria.

Spraying of the Nose.—A nose spray will be required, and the child should sit forward, or lie, with its mouth over a basin and well opened.

Hot Applications.—Heat is a most useful agent for relieving pain and for reducing inflammation. It may be employed as dry heat in the shape of a hot-water bag or salt-bag (see *Salt-Bag*), or as moist heat by bran or linseed *poultices*, or by *fomentations* or hot *bran-bags*. The bran-bags are especially useful for inaccessible places, those to which poultices and fomentations cannot be easily secured, as they can be just laid against the patient. Poultices for infants should be very light, and in some cases bran is preferable to linseed; and neither poultices nor fomentations can be applied as hot as in adult life, and they should always be tested *against the cheek* before being applied.

Linseed Poultice.—The child's clothes should be undone, and everything should be collected ready for making the poultice and brought near to the bed before the poultice is begun. These will be linseed meal or bran (if bran is used a small amount of flour must be mixed with the bran to bind it), a basin, a knife, a *kettle* of *boiling* water, a little olive oil, and a square of old linen a little larger than the size of the poultice required, resting on a thick piece of cotton wool; and a yard length of rag or flannel about four inches wide or a broad bandage.

A little boiling water should be poured into the basin to warm it, and the knife, and then thrown out. A little boiling water should be poured into the basin, experience will soon teach the right amount; the meal should then be sifted in and stirred briskly with the knife till the mixture is the consistency of *stiff porridge*. This should then be turned out on the rag, and spread with the knife rather less than half-an-inch thick, and the edges of the rag should be turned in all round over it. A few drops of olive oil may be dropped on the middle of the poultice and quickly smeared over its surface, as this prevents sticking and irritation of the skin from the poultice. The poultice should be folded over in two and carried thus to the child, and it should be applied with the linseed next the skin, when cool enough to be comfortably laid against the cheek; covered with wool and secured with the bandage.

Mustard Poultice.—A mustard poultice will often be very useful placed over the stomach in cases of "stomach upset" to relieve the

pain and vomiting, or to apply to the upper part of the chest and neck after croupy attacks; and one may be ordered for bronchitis and pneumonia, &c. A linseed poultice should be prepared as above, and a dessertspoonful of mustard should be sifted in with the meal for a small child; and about a tablespoonful for a large poultice for an older child.

Jacket Poultice.—Sometimes a jacket poultice is ordered to cover the front as well as the back of the chest. It is used less frequently than formerly, but, if not too thick nor worn too long, is considered very useful by some doctors.

Cut two separate pieces of rag or calico rather broader than they are long, according to the child's size, but both together sufficiently large to go round the child's body and lap over. From each, hollow out a place for the neck and arms (on the lines of making a child's stays). Lay these pieces of rag, which may be previously sewn together up one side, on a paste-board or a doubled newspaper. Have ready torn two strips of rag or flannel, each about two or three inches wide and half a yard long, a towel, some safety-pins, and some large pieces of cotton-wool.

Make a sufficiently large linseed poultice. Cover both pieces of rag with the linseed, and turn in the edges. Apply the poultices to the chest and back, drawing them well up round the neck, and well overlapping, both at the sides of the body and on the shoulders. Cover well with the broad pieces of cotton-wool. Secure the poultices to the body with the towel, doubled lengthways, and pinned with safety-pins. Safety-pin a strip of rag or flannel to the back of the towel on each side at the shoulders, and carry these over the shoulders and secure to the front of the towel to keep the poultice up.

If a *Wool Jacket* is ordered, this should be shaped in the same way from a sheet of cotton wool, laid on a backing of butter muslin, and joined up one side; safety-pinned on the other, or secured with tapes here and on the shoulders.

Poultices for the Abdomen.—These, which are most useful and comforting for the relief of pain in the abdomen, as in dysentery, colic, or severe diarrhoea in babies, should be prepared as follows. A bag large enough to cover the part should be made of flannel. The poultice, sufficiently large, should be made and turned into the bag, and then flattened out evenly to the usual thickness, after

which it should be applied as usual, covered with wool and secured by a bandage.

Poultices require to be changed in about two hours, sooner where mustard is used, if the skin becomes much reddened. The skin should be well dried with a towel when a poultice is removed, before a fresh one is applied, and the cotton-wool should be worn for a day or two after the poultice is left off.

Oatmeal or maize meal, which must be *cooked* for ten minutes and used as a thick porridge, may be used in the absence of linseed meal or bran, but these must always be placed into a bag.

Fomentations.—These are used for the relief of pain or inflammation, or for the treatment of unhealthy wounds. They are best made in the case of the former of spongio-piline or flannel, and it is important to have them *large enough*. A strong towel should be laid across a hand-basin, and the flannel ready folded and sufficiently large to well cover the part, or the spongio-piline placed in the centre of it and the edges of the towel folded inwards over the flannel; boiling water should then be poured over the flannel; the towel grasped at either end beyond the fomentation, and well wrung by twisting the ends of the towel in opposite directions. The fomentation should then be applied *at the same temperature as the poultice*, after testing it against the cheek, and covered with a piece of *oiled silk* (see *Medicine Cupboard*), over which a pad of cotton-wool is placed, and the whole secured by a bandage. If turpentine is ordered, fifteen drops of chemist's oil of turpentine should be sprinkled over the fomentation after it is wrung; for little children before the boiling water is poured on.

Fomentations for wounds are best made of double "*lint*," or of several thicknesses of plain "*gauze*"; they should be wrung in the same way, usually out of some "*antiseptic*" solution, in a cloth or large stout handkerchief or small towel; and covered with oiled silk, wool, and bandage. A fresh piece of lint or gauze must be used for each fomentation, and the old piece burnt at once.

Bran-Bags.—Two bags should be made of flannel, filled with bran and sewn up. One should be placed in a steamer and heated, or, failing this, between two plates in the oven, and when removed for use the other should take its place in the steamer or oven.

Mustard Plaster.—A mustard plaster is often very useful placed over the heart in cases where it is acting weakly, as in "*shock*," or

in some cases of poisoning ; it is also often ordered to be placed over some part of the chest in cases of bronchitis or pneumonia, or over a heart inflamed during an attack of rheumatic fever.

Two squares of muslin or soft thin rag should be cut a little larger than the required size, and a paste as thick as *thick* table mustard should be made of mustard and flour mixed with tepid water. It is important that the plaster *should not be made too big*. For older children about one part of mustard and two parts of flour will be ordered as a rule ; for babies probably about one of mustard and four of flour, and it is advisable for babies to mix the plaster with white of egg instead of water. The strength used matters less than the length of time the plaster is left on. It should be removed *when the skin is just reddened*, which will be usually in about five to seven minutes. The plaster will probably be ordered to be repeated at intervals, and it is therefore important to prevent burning and blistering of the skin, by not leaving it on too long.

Leeches.—These are sometimes ordered for pneumonia, heart disease or ear inflammation. The leeches, which can be procured at a chemist's, should be kept in water in a glass jar, and covered with a piece of muslin or rag tied on. The part to which they are applied should be previously well washed and dried, and then moistened with a few drops of milk. The leeches, which must be handled as little as possible, after the water has been poured off from the jar, should be slid into a wine-glass, tail-end, which is the broad, least-pointed end first. The head-end can be distinguished from the tail-end by letting the leech walk. The wine-glass should then be turned upside down over the prepared area of skin. If the spot is very exact and limited, such as behind the ear, a "test-tube" should be got at the chemist's, should be half-filled with cotton-wool, and the leech slipped into this, tail first, and the open mouth of the test-tube should then be placed over the desired spot. The leech usually drops off when satisfied, if it does not in about a quarter of an hour a little salt should be sprinkled on it, which will cause it to fall off. It should never be pulled off, as if this is done the teeth are left behind. A little pad of clean rag should be bandaged on to the leech bite, but it should be watched to see that it does not continue to bleed. If it does, sponging with really hot water and applying firm pressure with the fingers for a few moments to the little wound, over the rag, will generally stop it.

Recognition of Commencing Illness.—If a child is unwell, and especially if it feels hot and seems restless, the mother should *take its temperature*. In young children the first sign of illness is generally a listlessness, peevishness, and disinclination for its play or food. The child who is well is always active and generally hungry. The mother *should never forget to examine the throat* in any child who does not seem well; little children rarely complain of their throats, and we must look for such a condition. The throat is best examined with the back of the handle of a teaspoon, pressing down the tongue. The mother, if she faces the child, should have a good light just *above and behind her right shoulder*, which falls on to the child's face and gives her a good view of the mouth and throat. Far back, and tucked away on either side of the throat, are two little rounded prominences, the *tonsils*, and in the middle of the throat a little oval dependent body, the *uvula*. The condition of these three should be noticed, whether reddened and showing many reddish streaks, or swollen, or showing little white dots, or little irregular greyish-white patches upon them. She should then slip her hand down to the neck, and feel round it, just under and behind the ears, and if this part feels hot or the child complains on handling it, or if any swelling or lumps are felt, the *glands* are probably enlarged. The *tongue* should also be noted when the mouth is opened, whether there is a whitish or yellowish fur on it, and the breath whether unpleasant. The *motions* should also be examined of an older child no less than of a baby who is unwell. They should be, if healthy, a light yellowish-brown in colour, formed, but soft and smooth, containing no lumps, and possessing only the ordinary faecal odour. Any very unpleasant odour, slime, undue hardness and dryness, unusual looseness, pale or pasty colour, or lumps of unaltered food should be noted. It would be well in the case of the still older child to examine the motion passed, and not to take its assurance that this has been satisfactory.

If the child is very unwell, skin hot and dry and cheeks flushed, tongue coated, there is sickness and headache, the urine is scanty and high-coloured, the child shivers or may have a convulsion—a more serious illness, such as scarlet fever, pneumonia, inflammation in the abdomen, or sometimes influenza, may be suspected. The doctor should be sent for. The child should be put to bed and given only milk (see *Milk in Illness*), and drinks for thirst.

If the child vomits and complains of stomach-ache and the temperature is fairly high, it has probably an attack of *acute indigestion*, the "stomach upset," so common between the ages of three and eight years, and the commonest cause of "feverish attacks."

It is important for the mother to distinguish between this common affection and the more serious symptoms indicating inflammation of some part of the bowel or its coverings. Complaint of pain in the abdomen, below the line of the navel, *especially on one side*, with tenderness there, with constipation and increased pulse rate, sometimes with a raised temperature, often with sickness, require immediate medical attention. Meanwhile the child should be put to bed, hot fomentations (see *Fomentations*) applied to the abdomen, only diluted milk given, and no aperients administered.

If the child has a bad cold, the eyes watering and the nose running; has headache and the temperature is a little raised; the throat feels raw and there is a little tickling cough and sometimes hoarseness, it may be a *feverish cold*, or the first stage of *bronchitis*, *croup*, *measles*, *whooping-cough*, or *influenza*.

If the child is very unwell, shivers, and has headache, and complains of a sore throat, and the temperature and pulse run up high within a short time, it may be a simple *inflammation of the tonsil*, or *scarlet fever*. If the latter, the bright red blushing skin and vivid red pin-point spots of the scarlet fever rash appear in a day or two.

If the child seems decidedly ill and listless, and the temperature on being taken is either not raised, or, if up, is not very high, though the pulse rate is increased; the throat is sore, or sometimes *the nose runs* without any symptoms of a real cold, or without a sore throat, or sometimes there is a croupy cough, quickened and more or less difficult breathing; and especially if there are swollen glands in the neck, it may be *diphtheria*.

If the child is very ill, shivers, and the pulse and temperature run up high within a short time, the skin and lips are hot and dry, and the breathing rate is increased, there is *a short cough which causes pain*, which the little child often says is in the stomach, it may be *pneumonia*.

If a child who is apparently well, or only a little out of sorts,

develops a rash, it may be *German measles*, or *chicken-pox*, or a form of nettlerash, or a very mild form of scarlet fever; and, as in all cases where rashes develop, the child should be isolated from other children until advice is obtained.

In all cases of rash the mother should strip the child and examine the whole body in a good light, so that she may describe the first appearance of the rash to the doctor. She should note especially, on paper (1) where the pimples are; (2) whether they tend to run together in patches or are separate and scattered; (3) whether they are flat or standing up above the skin; (4) whether they are pale in colour or bright red. In chicken-pox the rash comes out in crops of *soft* raised pimples, which soon become watery.

A marked degree of fretfulness followed by frequent vomiting with high fever, tossing and screaming from pain in the head, which is held bent rigidly backwards, all coming on rather suddenly, especially if the pupils of the eyes look unusually small, or a slight squint is noticed, and if the child's restlessness soon gives place to marked drowsiness, would suggest *inflammation of the brain*. Nothing can be done in such a case except to put the child to bed, draw the blinds, give a dose of "salts" and apply cold cloths, or better an ice-bag to the head, pending the doctor's arrival.

If the child is very ill, with a high temperature, and a rash of *hard* red pimples, especially on the face and wrists, comes out as the temperature begins to go down, it should suggest *smallpox*, and the child should be strictly and immediately isolated.

Limping in a child should always be investigated, and if no sore on the foot or painful toe-nail or other cause is found to account for it, it should be taken to the doctor at once; as also any child who shows weakness of, or inability to use an arm or leg; or *disinclination to stoop* and difficulty in bending the back. Persistent complaint of stomache-ache, for which no cause can be found in a little child, or complaint of pain in a knee should also receive attention.

If a baby persistently *refuses its food*, or seems to have *difficulty in swallowing it*, if the cause cannot be definitely ascribed by the mother to thrush, or to the difficulty in sucking, which results from stuffiness of the nose due to a cold, advice should be sought without delay. In the case of a small child who refuses its food the mother should think of the possibility of a *sore throat*, a painful

tooth, a sore mouth, or mumps; and, of course, commencing illness.

Mumps, which is rare in very small children, usually sets in with feverishness, and the child is poorly and may ache all over. Swelling is then seen in front of and under the ear and often under the chin, usually on both sides. The swelling is hard and painful and the jaw stiff, any movement of it causing pain.

A slight discharge, which leaves a yellowish or greenish stain upon the clothing, and causes a reddening often with itching or burning of the parts, is not uncommon in little girls, and this condition requires prompt medical treatment.

If a child is noticed to be easily and frequently *breathless* after slight exertion or during play, it should always be taken to a doctor, since breathlessness is commonly a symptom of derangement of the heart.

If a tendency to swelling of the feet, especially round the ankles, or puffiness round the eyes, especially with paleness of the face, is noticed in a child; or if there is a lessening, or persistent increase, in the amount of water passed, or complaint of discomfort in passing the water, advice should always be sought at once.

If a round, itching, reddish spot is noticed on a child's body or limbs, which has a scaly appearance round the edges; or if a round irritable patch is noticed on the head, in which the hair is breaking or rubbed off, the hair in the last case should be shaved off closely round it with a pair of scissors. The spot in both cases should be well washed with soap and water with vigorous rubbing, and the child should be prevented from mixing with other children, using their hair brushes, sponges, or towels, &c., or putting on their hats and should be taken to the doctor for treatment, as it is probably *ring-worm*, which children easily catch from each other.

Inflammation of the Eyes.—Watering of the eyes, redness, or a blood-shot appearance; complaint of pain or smarting in them; or a tendency to keep them shut, avoiding the light, all point to inflammation of some part of the eye. The inflammation may be slight and transient, or serious, threatening the child's sight, and hence *in any case* which does not clear up *in a day or two* under the simple treatment to be mentioned below, advice should be sought. In those cases where *the eyes are blood-shot and the child avoids the light*, or where *there is discharge from them with matting together of the*

lids, or redness and swelling of these, advice should be sought without any delay.

In the absence of these last symptoms the eyes should be well bathed and sluiced out with boracic acid lotion, in the manner recommended for the new-born baby in Chapter II., three or four times a day. A little boracic acid ointment (see *Medicine Cupboard*) should be kept smeared on to the edge of the eyelids to prevent them sticking together; and remembering that eye inflammations are often infectious, from infection conveyed from one eye to the other, or from one child to another, the child should be prevented from touching the bad eye; and his towels, handkerchiefs, and sponges should not be used by other children.

Headache in Childhood.—Children not uncommonly complain of headache, and this is perhaps most frequently due to *indigestion*, and will often be relieved by a dose of “salts” or castor oil, and careful attention to the diet, which should be temporarily very light; and sometimes, where vomiting is not already present, an emetic (see *Ipecacuanha Powders*) may cure the condition. The headache is sometimes due to *constipation*, when a dose of salts will be effectual. It is again in hot weather often due to *exposure to the heat of the sun*, when a sleep in a dark room with the application to the head of cold folded cloths will be the best remedy; and attention should be given to the question of shady and well-secured head-gear, and the child's nurse should be cautioned as to exposure of the child to the hot sun during airings. Headache is often a symptom of *an on-coming illness*, such as one of the fevers, or it may be the result of a blow.

Persistent complaint of headache should lead the mother to suspect either an inactive liver, resulting in biliousness, chronic indigestion, defective eyesight; rheumatism, especially if the neck and jaws are coincidentally stiff and painful; or the child shows other signs of rheumatism (see *Rheumatism in Childhood*); insufficient fresh air indoors, defective drainage in the house, over-pressure at school, or anæmia.

Adenoids.—One hears a good deal nowadays about adenoids and enlarged tonsils and the operation for their removal. The majority of children who are taught to be nose-breathers (see *Nose-breathing*) and who are reared to a fresh air existence, and whose nutritions have been perfect in infancy, will be unlikely ever to

suffer from them, but in a few cases it is difficult to ascribe a cause for their occurrence, and they may occur in young babies.

If a child has a definite obstruction to *nose-breathing*; speaks indistinctly, as though it were always suffering from a cold, and especially if it was late in talking distinctly, and particularly in pronouncing its “n” and “m”; if it snores and sleeps restlessly with its mouth widely open at night; if it seems deaf, slow of hearing and understanding what is said to it, and is generally backward for its age; or if it is subject to constant colds and coughs—adenoids must be suspected, and a doctor consulted.

Adenoids, if they exist, may cause ear troubles and deafness; frequent colds, which themselves often lead to worse conditions, arising out of the unhealthy nose and throat. They may lead to imperfect chest development and poor breathing; to nervousness, backwardness, and deficient mental power, and to stunted bodily growth; to deformed teeth and a thick, indistinct habit of speech.

Tonsils rarely require removal in children, and never merely because they are enlarged. Their removal has a weakening effect on the voice, which would be a serious consideration for an intending singer, but the removal of adenoids under a suitable anæsthetic (never under the insufficient anæsthesia of gas) is easy and not only secures the child from these risks and disadvantages, but often means the beginning of its mental and physical progress.

Feverishness.—If a child's temperature when taken is up to 100° F., the mother should keep it quiet in an airy room, warm but lightly covered, and should avoid chills *which are easily taken while there is any temperature*, and she should take the temperature again in about six hours. If it is higher, then she should seek advice; if not, and the child is not seriously disturbed, she should manage it according to the following directions, and wait for twenty-four hours. Older children are better in bed, but very young children and babies are often more comfortable and sleep better if they are taken up and nursed from time to time. Frequent drinks of boiled water should be given, or sweetened barley or rice water; and if the child is disinclined, *food should not be forced upon it*; there is nearly always some digestive disturbance with diminished digestive capacity in feverishness. To meet this, if food is desired, the breast-fed baby should be given two or three tablespoonfuls of barley water before each nursing, and the intervals between each nursing should be

prolonged. The bottle baby should be fed with smaller quantities than usual, and the food should be given more diluted than usual. The older child should have milk diluted with water or barley water, one-third being diluent; porridge, farina, farola, milky rice, corn-flour, or cereal jellies; soup or broth or Hipi or boiled fish; bread and milk, stale bread and butter, rusks, or thin, crisp toast; light milk puddings (not tapioca) and jellies, custards or junkets. Boiled or poached eggs should be given only if the tongue is quite clean, and red meat or poultry should be excluded while the temperature is up.

For thirst, water, soda water, barley water, rice water, Imperial drink, currant tea and fresh lemonade may be given freely (see *Drinks*). A dose of castor oil, suitable to the child's age (see *Castor-oil Dosage*), should be given, shaken up in a little warm milk, sweetened, and flavoured with essence of peppermint in the case of the older child. The child should be sponged frequently, especially if it is restless, and the skin is hot and dry. If the temperature remains up to 100° F. for longer than a day, and the cause is uncertain, the child will be advisably isolated from other children and medical advice should be sought.

Feverish Colds.—Feverish colds, chills of all kinds, and many illnesses will be very largely prevented by careful attention on the part of mothers and nurses to the following points.

Children should be reared from infancy upwards in a fresh air existence, indoors as well as out of doors.

The rooms in which children are during the day should never be kept too hot, for the transit from such rooms to cold halls and staircases and sleeping-rooms is very risky.

Young children's sleeping-rooms should always be warmed in cold weather—if possible by a fire; if not, by a large lamp before they enter them to go to bed—and infants are better bathed before a sitting-room or kitchen fire than in a cold bedroom without a fire on cold days.

Children's bathing arrangements should be carefully regulated (see Chapter IV.). A cold spinal douche given daily to healthy children who are actively running about, and a cold bath (between 50° F. and 60° F.) to healthy children after the eighth year, are valuable preventives of colds.

Babies in arms and little children should never be taken out

in cold weather unless their legs, thighs, and abdomens are enclosed in wool, and should wear long-sleeved, knitted woollen shirts at all times ; and when crawling about, babies should wear flannel or knitted woollen drawers over the napkin, and should not be put down on to cold linoleum or stone or draughty floors.

All children during the first few years of life should wear not only long-sleeved woollen *shirts* (fine and light in summer), but flannel or woollen *drawers* during the whole year ; and knitted or woven woollen *stockings* (not socks) in all but the hot summer weather.

Children should not be allowed to play about with bare arms and legs and necks when the sun is beginning to set ; and special care should be exercised in regard to the hours for outings and changes of clothing in early spring and late autumn, when sudden changes are common.

Older girls should wear closed flannel drawers and thick cashmere stockings in cold weather, and thin cashmere or silk stockings, but never cotton in the summer, and thick-soled shoes at all times out of doors. It is not advisable to muffle up the throat, especially with wool or fur, even in the case of children, and furs should not be worn fastened round the neck ; and it should be remembered that fur coats worn during walking are potent producers of colds, though they are suitable enough for driving.

Children should wear night-suits rather than night-gowns, since they so often kick off their bedclothes ; and they should essentially wear woollen night-garments in cold weather, and preferably at all times.

Children should not be allowed to become *over-heated* in winter by exercising and playing out of doors in thick coats and wraps. Warmth during play and active exercise should be obtained by means of light woollen *under-garments*, especially shirts or vests and drawers ; and wraps should be at hand to put on *after* such exercise and play, dancing classes, parties, &c.

Children who go out in wet weather should essentially wear thick woollen stockings or socks, and thick-soled boots and shoes, and felt-covered cork soles may well be worn inside the shoes. They should also wear woollen under-garments, and if these conditions are fulfilled there is little to fear from getting wet ; and if after a soaking they are well rubbed down with a dry, warmed

towel before fresh clothes are put on, they will take no harm. Little children may safely be sent out to play in snowy weather, if they wear snow-boots or thick-soled boots and efficient gaiters, woollen stockings and knitted woollen or flannel drawers ; but they should be allowed out with more caution in melting snow.

After illnesses children should be carefully prevented from getting overheated in play ; from exposure after sunset, or to damp cold or raw, misty weather.

Babies during teething, and children suffering from any illness in which the temperature is raised, however little, are very prone to take a chill, and should therefore be carefully guarded from such.

Little travellers coming home to England across the Line should be well provided with woollen underclothing and warm outdoor garments for *landing in England*.

Adults with colds should not kiss babies and children, or allow them to inhale their breath.

Rickety children, rheumatic children, and children who have adenoids are especially liable to catch frequent colds.

Children who have repeated colds, or who cannot throw off a cold, should be taken to a doctor, since these may be due to the existence of adenoids, or may lead to the growth of adenoids, or to deafness ; and also the germs of consumption not infrequently find a resting-place in the soil prepared by a prolonged cold.

With the onset of a feverish cold the child is generally peevish, tired, and heavy, and more thirsty than hungry. The temperature is often a little raised at the beginning, and the child is often constipated. It sneezes and the eyes water, and the nose runs, and there may be earache. The throat feels raw and the voice may be hoarse. There is often a little tickling cough which increases the rawness of the throat, and which becomes more moist and looser as the cold develops and the nose becomes more blocked.

The risk of a feverish cold, which is the greater the younger the child, is that it may pass down into the chest and become the starting-point of bronchitis. Hence the first essential in the management is to get it well as quickly as possible.

The child should not be kept indoors if the weather is dry and sunny and there is no cold wind, unless the temperature is up to 100° F., when it should be kept in one room. Draughts should be avoided, but fresh air is essential. Woollen underclothing should

be worn. The sleeping-room should be as warm as the room the child has occupied by day. The child should have plenty of fluid, and the diet should be that recommended for feverishness (see this).

The Nose.—A little pure white vaseline should be melted in a teaspoon, and, when cooled sufficiently, a drop or two should be dropped into each nostril every hour or so, and a little vaseline should be rubbed into the bridge of the nose, and also over the skin of the upper lip. This will relieve the stuffiness, and will be very necessary in the case of the baby to enable it to suck. When later the discharge from the nose becomes thick, the older child should sniff the following solution well up into the nose several times a day : Half a tumblerful of warm water containing a good pinch each of bicarbonate of soda, table salt, and borax.

Stomach and Bowels.—If the child is constipated, the bowels should be opened with a dose of salts (see *Dosage of Salts*). If the tongue is coated and the breath unpleasant, a dose of castor oil (see dosage) should be given.

The Sore Throat.—A cold compress should be applied, especially at bed-time, as follows. Wring a large handkerchief well out of *cold* water ; fold this lengthways into a band sufficiently wide to come well up round the throat. Cover with a strip of flannel or a woollen stocking, and safety-pin securely. The cold-water compress becomes *warm* and has a very soothing effect.

The Hoarseness.—Let the child inhale steam impregnated with friar's balsam (see *Steam Inhalation*), and this will also relieve the sore throat.

The Cough.—Rub the chest well with the liniment recommended under *Bronchitis*, applying a thick piece of wool to the front and back of the chest after the rubbing. The cough, restlessness, and feverishness, or headache will often be relieved by the following medicine, which the mother, if she is out of reach of medical aid, may obtain from the chemist, and give every four hours :—

Sweet spirit of nitre	.	.	.	15 drops
Ipecacuanha wine	.	.	.	5 drops
Mindererus spirit	.	.	.	30 drops
Glycerine	.	.	.	20 drops
Camphor water to make	.	.	.	1 tablespoonful

Ask the chemist to send an eight-ounce bottle. *From three to six*

years, give *one tablespoonful* at a dose. From *one to three years*, give *two teaspoonfuls* at a dose. *Under one year*, give *one teaspoonful* at a dose.

The child should be given a hot bath (100° F.) before having the medicine, which should not be given on an empty stomach; and it should then be clothed in a flannel night garment and put into a warm bed.

Influenza.—This disease may begin in several different forms having quite different symptoms. The mother might suspect it, if when influenza is prevalent the child has a severe feverish cold, and especially with aching pains in the body generally, and marked prostration, and would be wise to seek advice as soon as possible.

Acute Indigestion.—This is nearly always due to an indiscretion in the diet accompanied by chill, and the child whose feeding is regulated on strictly suitable lines will rarely suffer from such “upsets.” The attack usually begins more or less suddenly, with vomiting, pain in the stomach, feverishness, furred tongue and headache, and ends with a slight attack of diarrhoea which carries off the cause of the disturbance. No food whatever should be given while the vomiting lasts except drinks of water, or soda-water, if these are desired. An initial dose to a child of from three to eight years of half a small teaspoonful of bicarbonate of soda and fifteen drops of sal volatile with five drops of essence of peppermint in a wine-glassful of cold water, sweetened and coloured with cochineal, if any is at hand, may relieve the child; or the drinking of a large cupful of hot water containing a teaspoonful of bicarbonate of soda, even if it is returned, by washing out the stomach will often considerably soothe the stomach. If the child complains greatly of pain in the stomach, or vomits severely, a mustard poultice (see *Mustard Poultice*) should be made, and applied across the middle of the body, just above the navel, over the site of the stomach. A dose of castor oil (see dosage of this) should be given as directed under “*Feverishness*”; the nose should be firmly “held” during administration, the mouth should be well wiped out afterwards, and the child should be told to repress as far as possible the bringing up of gas, and should be given a handkerchief saturated with eau-de-Cologne or toilet vinegar to hold over the nose and mouth. The difficulty in retaining castor oil is chiefly due to the taste and constant return of nauseating gas, and if these precautions are taken

this is rendered much easier. If the oil has not acted in four or five hours, a cup of hot drink should be given (not milk, which is better avoided in all cases of acute stomach disorder until the trouble has subsided), and an injection of warm soapy water to encourage the action of the bowels. If the child has not kept down the oil a dose of salts should be given (see *Dosage of Salts*) as soon as the sickness permits. A cup of soup or broth, beef-tea or Hipi, with thin, dry, crisp toast or a cup of Benger's food, may be given when the bowels have acted well and the child feels better. This may be followed later by fish or *minced* chicken or fresh tongue, and later by *minced* mutton not too well done, mashed potato or well-boiled rice and gravy, and light milk puddings (see p. 201), but the ordinary diet should be resumed with care.

Chronic Indigestion.—Perhaps the commonest cause of delicacy in a child between the ages of three and eight years is *chronic indigestion*, though the trouble is very often not suspected to arise from the stomach. Such a child, who must be placed under the doctor's care for very special treatment, and who does not usually complain of its stomach, looks pale, with a tendency to the formation of blue shadows under the eyes, and is easily tired; is found to have unhealthy motions, when these are examined, and bowels which act irregularly; sometimes they are constipated and sometimes they are too loose, and often a quantity of slime is passed with the motions, which may be offensive smelling and may contain undigested food. Worms flourish in such a bowel, and, like an unhealthy chest, it will offer a favourable soil for the germs of consumption. The child's breath is often unpleasant and its tongue coated, and its appetite is very variable, sometimes excessive, when it generally craves the most tasty and indigestible foods, and sometimes very poor. It is generally nervous, fidgety and irritable, and subject to nightmares and broken sleep, and often grinds its teeth at night. The cause of this condition is again unsuitable feeding, and usually this child has *far too much starchy food*, such as bread, farinaceous milk puddings, porridge, corn-flour, &c., and also sugar and jam, and not enough butter and easily digestible flesh food in its diet, and the doctor will order a special diet in addition to medical treatment. Such a child needs abundant fresh air and sleep.

Brine Bath.—The use of a tepid brine bath with friction by

the hands all over the body, after the child has been soaped, followed by a cold spinal douche, will often effect a wonderful improvement in its general condition.

The ordinary fitted bath of average size in the bathroom, if one quarter filled, holds about seven to ten gallons. This is sufficient to bathe the child, and to this about half-a-dozen handfuls of common salt, or, much better, Tidman's sea salt, should be added. Sometimes a hot salt bath may be given with benefit at bed-time, or a good handful of salt may be added to two quarts of cold water, and this used as a cold spinal douche after the daily bath.

Worms.—Children between the ages of three and eight, especially in the Colonies, are liable to suffer from worms; most commonly from the "round" and "thread" worms, and more rarely from the "tape" worm. The ova (or eggs) of these enter the child's body by the mouth, probably especially through the drinking of impure, unboiled water, the indiscriminate eating of unprepared and unwashed fruit and raw green vegetable foods; of insufficiently cooked cereal meals and pork, and from infection from dogs and cats, conveyed to the mouth of the child and swallowed. The eggs then develop in the child's bowel into the adult worm. Their presence is not suspected, as a rule, until one is passed with the motions. The round worm looks, when passed, much like the ordinary garden earth-worm; the thread worms look like bits of white cotton; and the tape worm is usually passed in portions having the appearance of short lengths of white tape.

The symptoms ascribed to the presence of worms are only those of an unhealthy bowel condition, such as pallor, general ill-health, and sometimes complaint of vague pains in the abdomen; bad breath, restlessness at night, and grinding of the teeth, picking of the nose, and general nervous irritability, and a variable appetite. The home treatment of round and tape worms is not to be recommended, not only because the drugs used to kill the parasites have poisonous properties, and hence need careful regulation of dosage and administration, but also because the underlying condition of health frequently requires careful treatment and dieting.

Thread worms, which inhabit the lower part of the bowel, may be suspected when the child complains, especially at night time, of excessive itching round the opening of the bowel, and vagina

in girls. It often passes a good deal of slime, formed as the result of the irritation due to the presence of the parasites; and in girls there may also be a slight discharge from the vagina.

For the cure of thread worms two essentials must be borne in mind: (1) The prevention of irritation and scratching, and the maintenance of strict cleanliness of the parts, in order to prevent the child's reinfesting itself by swallowing the eggs conveyed to the hands during scratching of the parts; (2) to kill and get rid of the worms.

(1) The anus and parts should be bathed night and morning, and also after each movement of the bowels, with saturated boracic acid lotion, to which a little hot water has been added to warm it. The anus in and round its folds and the entrance to the vagina should be well smeared at bed-time with a little *white precipitate ointment (half strength)* procured from the chemist, which it must be remembered is poisonous. (2) Two or three doses of salts (see *Dosage of Salts*) should be given during the first day of treatment, and when the bowels have acted well an injection should be given of a pint of warm water containing a dessertspoonful of boracic acid powder (added when boiling, in order to completely dissolve it), to clear the bowel of slime. When this has returned, half a pint (a large breakfast-cupful) of *infusion of quassia*, procured from the chemist, should be injected, preferably with the "irrigation apparatus" (see *Irrigations*) if at hand, or with an ordinary syringe if not. This treatment should be adopted three nights a week, and on the other nights an injection should be given of a pint of warm water containing two teaspoonfuls of table salt. If after two or three weeks of such treatment the condition is not cured, medical advice must be sought.

Dysentery in Older Children.—The more or less sudden occurrence of an attack of diarrhoea in a child, with motions which as they become increasingly frequent contain more and more slime and perhaps blood, and less and less brown material, and which are passed with much straining and pain in the abdomen, constitutes an attack of dysentery.

It occurs especially in hot weather, when the indiscreet eating of unripe or over-ripe unprepared fruit, or the drinking of unboiled, impure water or of unboiled, impure milk, seems to pave the way for its occurrence, or cause it.

Medical advice should be called in, and meanwhile the child should be put to bed and kept warm, and at the beginning of the attack a dose of castor oil should be given. The child should be fed frequently and in small amounts with boiled milk and arrowroot—which must never be given *raw*, and must be boiled for *ten to thirty* minutes, according to the age of the child—and this, on account of its binding effect, is especially useful. Rice water (see *Recipe*) may be given as a drink, with or without boiled milk added. Hot fomentations made sufficiently large or linseed poultices over the abdomen (see *Fomentations* and *Poultice for Abdomen*) will relieve the pain, and hot bottles to the feet. The child should be discouraged from straining, and the motions should be disinfected as in typhoid fever (which see), using either lysol (one teaspoonful to the pint) or carbolic acid (one in twenty), and they should be as carefully disposed of. All milk and water used in the household should be boiled.

Inflammation of the Tonsil.—It is always advisable in a case of sore throat to call in a doctor, who will make a definite diagnosis of the condition and prescribe suitable treatment, but the mother can do much to relieve the child. Inflammation of the tonsil, which often goes on to the formation of an abscess or “quinsy,” is a very painful and debilitating affection. It is most often due to a chill taken when the child is constipated and the digestion disturbed,¹ especially in a child who has a rheumatic inheritance or history. The daily action of the bowels is a most important preventive of quinsies. The child at the beginning of the illness feels ill, often shivers, and has headache, and the throat is sore on swallowing. A temperature develops which often runs high, the glands of the neck are usually swollen, and the throat and neck, and often the ear, ache; the voice becomes indistinct and thick, and the child speaks through the nose. The mother should give it a dose of salts and keep it warm in bed. The doctor will probably order sprays or gargles and other medical treatment. There is little

¹ The occurrence of repeated sore throats, as of constant headaches or unaccountable conditions of poor health, in children should always lead to an inquiry into the sanitary arrangements of the house. It may also be said here that before taking a house, new or old, at any time the soundness of these arrangements should be ensured by expert inspection; and that these and the drinking-water supply should always be subjects for careful investigation when holiday lodgings are being selected.

appetite and great pain on swallowing as the throat gets worse, but the mother should encourage the child to drink quantities of hot milk, as this is the best possible poultice to the throat, and hastens the ripening and breaking of the gathering. She will greatly relieve the child by applying poppy-head fomentations to the throat; and when it is inclined to sleep, which it will do more comfortably if the head is well raised on pillows, a linseed poultice will be very comforting. A kettle should always be boiling on the fire or on a spirit-lamp, and a saucepan at hand, in order to prepare the constant hot drinks and applications which are so soothing and useful during this illness. Inhalation of steam impregnated with friar's balsam is often very useful.

Poppy-head Fomentations.—Two poppy-heads from the chemist should be broken up and simmered in a quart of water (about four breakfast-cupfuls) until the water is reduced to about half. The water should be strained off, and a flannel should be soaked in it, wrung out (see *Fomentations*), and applied high up round the neck, covered with cotton-wool and a bandage. This will require changing every half-hour, and the same poppy-water may be used repeatedly.

Inhalation.—A teaspoonful of friar's balsam should be added to a pint of boiling water in a wide-mouthed jug, and a towel wrapped round the jug. The child should sit up and place the mouth and nose well over the mouth of the jug; a towel should cover the child's head and the jug, and it should take deep breaths for about ten minutes.

Croup.—The doctor should always be called in to make the diagnosis in a case of croup, since the croup may be diphtheria of the windpipe. The following hints for treatment are given for the relief of the child until the doctor's arrival. The child may have a sudden attack of difficult croupy breathing during the night; or may be unwell with a feverish cold, hoarse voice, and a harsh, dry, barking cough, and then wake suddenly during the night making a peculiar crowing sound and gasping for breath. A steam-tent and a hot bath should be prepared, and meanwhile the atmosphere of the room should be moistened by bringing a bath of *boiling water* close to the cot-side, and plunging towels in and out of it to create steam round the child. Hot fomentations made of anything to hand should be applied round the throat, and the child made to vomit by tickling the back of the throat with the finger

If vomiting does not ensue, a five grain ipecacuanha powder should be given, and repeated in ten minutes if it does not act. After this the child should be placed in the hot bath (105° F.) for five minutes, and then into the steam-bath. A light linseed poultice with a dessertspoonful of mustard added may be applied to the upper part of the chest and front of the neck; and if the doctor cannot arrive for several hours, a dose of castor oil (see *Dosage of Castor Oil*) should be given. Children who are subject to croupy attacks need plenty of fresh air indoors at all times, and will benefit by a cold douche to the spine (which see) used every day when they are running about, and by the use of brine baths (which see). Their diet should be carefully regulated, and very digestible, and supper especially be a light meal.

Child Crowing.—Nervous rickety babies, especially during teething, are sometimes subject, *in the absence of any cold or cough*, to a suffocative spasm which causes them to “hold their breath” and then make a “crowing” sound. Such an attack, even if slight and passing off quickly, requires that medical advice should be obtained as soon as possible. If after losing his breath the child is long in regaining it, pull his tongue forward and hold it out with a handkerchief end, dash cold water over his face and head, smack his buttocks smartly, put a hot sponge to his throat, tickle his throat with the finger, lower him into a hot bath. If unsuccessful, commence artificial respiration (see Chapter XI.), and continue it till the doctor arrives. If after such an attack the doctor’s arrival is delayed, put a hot fomentation (see *Fomentations*) round the throat, and obtain and give the mixture recommended under *Convulsions*, keeping the child very quiet and warm in its cot.

Bronchitis.—Bronchitis is not an uncommon affection especially of delicate or “rickety” babies in cold weather. Even the slightest cases always require the greatest care and the doctor’s attendance, *on account of its great liability to develop into a combination of bronchitis and pneumonia*, which is particularly dangerous to babies; and also it is often the first stage of some “fever.” It begins usually with a cold and slight cough, and the child is fretful and peevish, and its appetite is indifferent, and there may be a little feverishness. The child later has fits of noisy coughing; its breathing is more or less oppressed, and accompanied generally by wheezing and some rattling. It should be kept in one room,

of which the temperature is about 65° F., but plenty of fresh air must be admitted, as in all chest complaints, which require an abundance of oxygen; pneumonia is often most successfully nursed out of doors when the weather is fine. If the doctor's arrival is delayed, castor oil or fluid magnesia (see dosage) should be given to open the bowels well; and the hot bath and mixture recommended under *Feverish Colds*.

The doctor will probably order the steam-tent for a bad case, and perhaps a mustard plaster. The child will have light diet, according to the degree of feverishness. Children under five do not spit up phlegm, and as they swallow it the stomach is often upset. They should, as far as possible, be prevented from doing this, and encouraged to spit out after coughing. It is helpful to rub the chest later with a liniment consisting of one part of turpentine mixed with four parts of camphorated oil. This should be rubbed in well, back and front, for about ten minutes, and a thick piece of cotton-wool worn afterwards over the chest and back beneath the vest, or a cotton wool jacket (see this), and a flannel night-garment must always be worn. Sometimes the child will be much relieved by an emetic, such as one of the five-grain ipecacuanha powders, aided by tickling the throat, as this, by producing vomiting, helps to dislodge the accumulated material in the chest and expel it. It is important to remember that when ipecacuanha is ordered by the doctor, *as a medicine and not as an emetic*, that it should be given *just after food*, and not on an empty stomach. A hot bath, followed by *light* linseed poultices (see *Poultices*), alternately applied to the front of the chest and back, or hot fomentations (see *Fomentations*) for babies, will often give relief and allow of sleep.

Pneumonia.—For the first symptoms of this disease, see p. 285. Later, as the breathing becomes more hurried and oppressed, and the short painful cough more frequent, older children expectorate a little *rust-coloured* phlegm. The nursing of pneumonia is much the same as that of severe bronchitis, with which in many cases, in young children especially, it is often combined. Mustard plasters or poultices may be ordered, and sometimes a steam-tent, and sometimes leeches. The room must be about 65° F., *and should be kept very airy*. A flannel night-gown must be worn. Plenty of drink should be given, especially barley water. Milk must be given scalded and *well diluted*, and, like all fluid, *in sips*,

as indigestion and flatulence are very undesirable in this disease. The child must be carefully watched for the signs of difficult breathing (see *Signs of Difficult Breathing*), and later on in the illness, when the heart weakness, which is a danger in pneumonia, may occur, the pulse should be carefully watched for any increase in its rate. The temperature in pneumonia will often be high, when frequent sponging will soothe the child, especially as sleep is a very important matter. The child will often be more comfortable raised a little and supported on pillows, and easier on one side than on the other. In many cases of pneumonia, after remaining high for from five to ten days, the temperature drops suddenly, forming a so-called "crisis." At this time very great care is necessary to *prevent chill* and to *guard against collapse*, as the child is very weak. It must be given the prescribed nourishment regularly, and kept very warm and dry, and the fire kept up well, especially during the very early morning hours. Damp garments should be quickly removed, the child's body rubbed down with a *warmed* towel, and fresh *warmed* garments put on.

Nursing of St. Vitus' Dance.—This disease occurs in nervous rheumatic children, and is, in fact, a nervous form of rheumatism. A child who is given to nervous twitchings and constant grimaces or who is specially awkward and clumsy in its movements, may at any time when it is run down, or if it receives a sudden fright or whipping, develop an attack of this disease, and, having had one, it is likely from the same causes and even slighter ones to have another. Attacks vary in severity, the more severe ones may necessitate the child being kept in bed for from one to two months, and in the very worst cases, when feeding is a great difficulty and the movements so violent that the child must be protected from injury, a nurse will always be required. In all cases the nursing is special and important. *The heart, as always in rheumatic cases, requires absolute rest*; hence the child must be allowed no exertion, and the bed-pan or slipper must be used. *Rest to the nervous system* is also of the greatest importance, hence no exciting stories or play, or visits from friends, must be allowed, and the child who is often "difficult" must be humoured, and, as the movements cease during sleep, as much of this as possible must be induced, by frequently darkening the room on the slightest sign of it, and sponging the child. *As nourishment is a very important matter,*

every effort should be made to tempt the child and make it take a due amount. Fluids should be given from a specially thick *cup*, or, where the movements render drinking difficult, from a feeding-bottle, and only a spoon can safely be allowed for solids. Bed-sores must be carefully avoided (see *Bed-sores*).

Rheumatic Fever.—Typical attacks of rheumatic fever are characterised by swelling and excessive pain in one or more joints, a high temperature and profuse perspiration, and often a sore throat. They are uncommon before the school age. The nursing involves absolute rest in bed, remembering the dangerous effect of the rheumatic poison on the heart, and the avoidance of jars and sudden movements which cause exquisite pain in the affected joints, applications for which the doctor will indicate. The avoidance of chills, which the patient is especially liable to owing to his profuse sweats, and which must be guarded against by clothing him in a flannel garment and allowing him to lie between blankets; and by quickly changing him after sweating, and after rubbing him dry with a warm towel putting on a fresh warmed night-gown. A milk diet is usually ordered with gruels and milk puddings, and meaty preparations are excluded during the acute stage of the attack.

Rheumatism in Childhood.—The tendency to this is often inherited. It is rarely shown by definite acute feverish attacks like the above. It must be suspected, however, when a child complains of aching pain in the limbs, especially the legs, and at night; of pain and stiffness in a joint; if it has constant sore throats or stiff necks. A swollen and tender joint which the child is loath to move should be an indication to put it to bed at absolute rest at once, and seek advice, which also should be sought for the repeated sore throats, so-called “growing pains” and stiff necks. As stated previously, heart disease frequently arises insidiously in childhood through rheumatism, which, owing to its mild form, is not recognised and suitably treated.

Such a child should, when possible, live on a dry sandy soil, never on clay, nor near a river with its late and early mists. The house should be very dry and a fire lighted on the least suspicion of damp in a bedroom. The child should wear woollen underclothing and woollen night-garments at all times, and should be guarded as far as possible from exposure during damp weather. It should never be allowed to remain in damp clothes or shoes or exposed

to any other possible source of chill. The child's diet should include plenty of the lighter flesh-forming foods, such as fish, chicken, and dried pea, bean or lentil purées, and Plasmon, eggs, and, for older children, cheese dishes, rather than red meat in any quantity, and sweets and sugary foods should be restricted. The mother should satisfy herself that the bowels are opened well *daily*, and any tendency to liveriness should be reported to the doctor for its correction. Cold baths are not to be advised for rheumatic children, and sea-bathing must be allowed with extra precaution. The child should only bathe in the later morning in bright sunshine, and should never stay in too long so as to get chilled. Any tendency to breathlessness should be noted, and school competitive games and long distance runs and gymnastics should only be undertaken after medical sanction has been obtained.

Exercises, such as those with Indian clubs, dumb-bells, wands, and a Whiteley exerciser, all of which stretch and exercise the joints and sinews, are very useful, however.

Stiff Necks.—These will be best relieved by well massaging the painful part for about ten minutes with the liniment recommended under *Bronchitis*, and keeping it subsequently well covered with toasted wool or flannel. The pain will also be relieved by the application of a hot salt-bag (see *Salt-bags*), large enough to well cover the affected part, or the hot salt may be placed into a stocking, and the stocking applied round the neck.

"*Growing pains*," so called, will be best relieved by the use of long woollen "bed stockings" (not socks), and it is advisable for all rheumatic children to wear these in bed, and be given a hot-water bottle as well in cold weather. If knitted woollen stockings are not easily obtainable, the stockings may be made from white lamb's-wool, cut amply large to allow of shrinking in washing.

Sore Throats.—A child who is subject to these may with great advantage be made to gargle the throat, or a younger child may have it sprayed every night with the following solution. To half a tumblerful of warm water add a good pinch each of table salt, bicarbonate of soda, and *borax*.

Nursing of an Infectious Case.—Infectious diseases are caused by the entrance of germs into the body and blood, which by their growth and multiplication produce the symptoms of the illness. The germs enter the body in various ways, and we may be infected

as follows :—By contact with persons suffering from the disease, from whom the material from the nose, throat, and mouth (in diphtheria, scarlet fever, measles, consumption especially), and from the bowels (in typhoid fever and dysentery especially), and the dry scales of dead skin (scarlet fever, smallpox, chicken-pox, &c.) are often especially infectious. By contact with the handkerchiefs, clothing, bedding, letters and papers, toys, &c., of infected persons. By contact with sick animals—cats (diphtheria and consumption), and fowls and pigeons (diphtheria). By breathing air contaminated with germs (especially with those of consumption and colds, pneumonia and influenza). By contamination of the water drunk (especially in typhoid fever and dysentery). By contamination of the milk drunk (especially in typhoid fever, dysentery, scarlet fever, and diphtheria). By noxious gas escaping into the house as the result of defective drainage (especially sore throats and some forms of blood-poisoning). By contamination of foods we eat, such as water-cress and oysters, from their exposure to contaminated water or sewer gas (especially typhoid fever). Through abrasions of the skin, or wounds (especially lock-jaw and blood-poisoning). Lodging-houses and ill-conducted laundries may also be sources of infection; flies, which contaminate milk especially, and accumulations of dust, especially in dark corners.

Light (sunlight) and oxygen (fresh air) are both inimical to nearly all germs. The defences of the body against germs lie in the blood. These act most effectually, and either prevent the germs from obtaining a foothold or from flourishing in the body, when a person's health is at a high level and when his resistance is good—that is, not lowered by a chill or imperfect nutrition or prolonged hunger. Therefore, the prevention of much disease lies in ensuring children good nutrition, sound constitutions, good blood, abundant fresh air, and in avoiding chills. In frequent and thorough house cleaning—such a *nettoyage* as removes all dust and floods the house with light (frequently washing the windows and picture-glasses, &c., has a practical application here, and should always be remembered in children's nurseries) and the fragrance of spotless cleanliness; and in the avoidance, when possible, of unhealthy and inconvenient underground kitchens with their dark musty corners. In ensuring a pure drinking-water supply and a pure milk supply; and in the ensurance of sound sanitary arrangements, such as those of the

closets and house drains, and the maintenance of strict cleanliness of the sinks and dust-bins. Space forbids discussion in this book of the essential points concerning all these last, but information can be obtained regarding them from *popular* books on the subjects.

After infection there is a period of incubation or "hatching"—that is, of quiescence without any symptoms, during which the germs are growing and multiplying. The illness then begins, roughly during the *first week* in diphtheria, scarlet fever, and influenza; during the *second week* in measles, chicken-pox, smallpox, and usually whooping-cough; during the *second or third week* in German measles, mumps, and typhoid fever.

The necessary length of quarantine (or isolation period) of the patient varies in individual cases, and must therefore be settled by the doctor. In the case of the other children in the house, who should be kept home from school and never sent away where other children are, the quarantine, which should be reckoned from their last contact with the patient, should be for the full period of incubation of the disease, one, two or three weeks, as above, with an extra week added on in each case. The main essential in the nursing of all infectious cases is to prevent the spread of the infection in the house itself and also outside it.

The Sick-room and Necessaries.—The room in which the child is isolated and nursed should be removed as far as possible from the rest of the household, and should have an open fireplace essentially. A sheet frequently moistened with a disinfectant should be hung over the door of the room to act as a barrier; and if a dressing-room or a small adjoining room is not available, a large table should be placed just outside the sick-room on which food and other necessities for the child may be deposited. The curtains and pictures should be taken down, *the carpet taken up*, and any hangings and eider-downs and all upholstered furniture and all unnecessary furniture should be removed from the room. The child's bed should be placed out into the room and not against the wall; and it should be placed out of the draughts between the window and the door and chimney, and in such a position that the daylight falls sideways on to the child when lying in bed. Special cloths and brush and pan should be kept for use in the room; and a supply of body and bed linen separate from that of the household for the child's use. Some old cloths should be kept ready to cover the chamber after use, and

when removing its disinfected contents to the closet. A supply of soft linen for cleansing the child's mouth and of flannel for sponging the child should be at hand. There should be in the room a bath for the patient's use, and two large cans or water-jugs. Also a large bath to contain disinfectant solution in which all soiled linen can be placed as removed from the patient, and a slop-pail into which all floor cloths and bits of rag used for the patient can be thrown to be burnt as soon as possible, but *not for the chamber contents*.

On a serviceable table in the room should be placed a clock, and a writing-pad for keeping a "report" (see later). A pint bottle of saturated boracic acid solution, to be used with just sufficient hot water added to take the chill off, for cleansing the child's mouth. Two medicine glasses (see Fig. 16), one for measuring medicines, and the other for measuring disinfectants when making up solutions of these (see *Disinfectants*). A quart jug graduated in ounces (see Fig. 17) or a large breakfast-cup for measuring water for disinfectant solutions. A spirit-lamp, small kettle and enamel saucepan, all on a tin tray, will be useful in cases where a fire is not always to be in use. A supply of night-lights will also be useful. A flannel bed-jacket or a knitted wool jacket with sleeves will be useful for the child to wear over the night-gown in cold weather, since its arms are often outside the bed-clothes. In cases of scarlet fever or measles, besides the above the mother should obtain from the chemist either a pot of ointment consisting of cold cream four parts and boracic acid one part, *or* a bottle of olive oil four parts and eucalyptus oil one part, for rubbing the child over with daily.

The Mother.—The mother should wear a *short* washing dress and keep her sleeves rolled up, and over this a large overall with sleeves, or detachable washing sleeves. She should remove the overall and sleeves and wash her hands in disinfectant before leaving the room and mixing with the rest of the family. She should not take her meals in the sick-room, should wash her hands before eating, and should make a point of eating well throughout the time that she is nursing the case, and she should take a cup of tea and something to eat on first waking in the morning. She should not dress or undress in the sick-room, and should cleanse her teeth and gargle her throat daily with a solution consisting of one part of one-in-forty carbolic acid solution (see *Disinfectants*) with an equal part of warm water. She should have a couple of hours in the fresh air every

day. This is essential if she is to preserve her health and minimise the risk of being incapacitated by catching the infection herself. She should sleep on a couch or bed nearer the window, and not near the child.

Precautions against Spread of Infection.—All food and other necessities for the child should be placed in the adjoining room kept for the purpose, or on the table outside the sick-room. All food remains sent out from the sick-room should be burnt at once. All the crockery, cutlery, and silver used for the child should be washed in disinfectant before they are passed out of the room again. All milk and water used by the household should be boiled, and no milk or water should be kept *in* the sick-room, as these readily absorb the germs; no food, in fact, should be kept there. The household milk should be delivered in bottles, *not cans*, and the bottles should not be returned to the dairyman until they have been boiled (see *Cleansing of Bottles and Teats*). The floor of the sick-room should be swept daily after sprinkling with disinfectant solution, and then gone over with a cloth wrung out of disinfectant (such as Jeyes' fluid), which may be tied over a broom. This is to prevent the circulation of dust and scales of dead skin from the child's body, which harbour germs and are highly infective. The cloths when done with should be burnt. Dusting should be done with a damp cloth.

The washing, if it cannot be sent to a disinfecting station, should be done at home, the linen being soaked in disinfectant for several hours and then boiled.

The Child.—The temperature of the sick-room should be kept at about 60° F., unless the doctor orders it to be higher. Sick-rooms are usually kept far too hot as well as stuffy. The window should be kept open day and night, except in absolutely unsuitable weather. The child should be sponged night and morning, unless baths are ordered by the doctor, and it may with advantage be sponged more frequently if it is restless or sleepless, and if the skin is hot and dry, or irritable. When baths are given, these should be given quickly to avoid exposure and chill. The mouth should be cleansed with a rag over the finger dipped into the saturated boracic solution, and if the tongue is brown and dry and the teeth coated, this will be relieved by wiping out the mouth from time to time with equal parts of glycerine and fresh lemon juice.

Food will often be better taken if the mouth is well cleansed with warm water immediately beforehand. The mother should carefully wash and disinfect her own hands and brush her nails, which should be kept short, after doing this. She should avoid kissing the child at any time or catching its breath. In cases of scarlet fever, diphtheria or measles, rags should be used instead of handkerchiefs, and these should be burnt immediately after use, as the discharges in these cases are very infectious. A little liquid disinfectant should always be kept in the chamber, and after use it should be taken immediately to the closet and emptied; a little liquid disinfectant being thrown into the pan afterwards. In cases of typhoid fever or dysentery the motions should stand covered with disinfectant for one hour before being emptied.

The child's temperature should be taken morning and evening, and entered on a chart. The mother should keep a "report" on a separate sheet of paper, and jot down on this the special points or special symptoms she wishes to remember and report to the doctor, which are otherwise easily forgotten; such as the number of teacups of milk, broth, &c., or other food the child takes in the twenty-four hours; the amount of sleep when sleep is a difficulty, and any special new symptoms she wishes to remember. As far as possible, she should put *the hours by the clock* at which the food was taken, or during which the child slept, or at which the special symptom arose. The doctor can thus see at a glance all that has happened since the last visit. During the period of the rash the child suffers often from a very distressing itching and burning of the skin, and the mother should ask the doctor's permission to rub it over daily with the ointment or oil mentioned above, which also serves to prevent the diffusion of infective scales of skin from the body.

The Diet.—The diet should be made as varied and interesting as possible, and frequent drinks should be given. During infectious fevers it will usually be selected from the following. Milk variously diluted and flavoured (see *Milk in Illness*). Barley or oatmeal jellies, bread jelly, or gruels, Benger's food, Allenbury's diet food, Plasmon arrowroot, corn-flour, custards, junket, egg jelly, milk jelly, egg-flip, broth-flip, fresh broths, beef-tea, or meat juice or fresh chicken jelly. Valentine's meat juice, Hipi mutton essence, and Brand's essences. Fruit jellies of various flavours, and drinks,

such as plain water, soda water, barley water, rice water, lemonade, orange whey, currant tea, and Imperial drink ; and for older children cocoa and freshly-made weak tea, especially if made with milk (see *Drinks for Feverish Conditions*).

In convalescence the diet will usually be enlarged to include those items given under *Feverishness*, and later, pounded chicken and fresh tongue, scraped or minced mutton, mashed potato or well-boiled rice and gravy, &c., will be introduced.

The child will need amusement, stories, being read to, cutting out, and drawing and painting, and scrap-book making, &c., and such toys and books as can be burnt after the illness. Sick children all need to be spoiled.

Complications of Scarlet Fever.—In scarlet fever the three complications to be feared are an excessive degree of throat trouble ; inflammation of the kidneys, which may occur in the first week, or more likely in the third week ; and inflammation of the ears. The mother should carefully watch *the amount of water passed* in these cases. The doctor will frequently require a specimen for examination, and if the child passes *less* she should at once report the fact. Throat treatment if ordered should be carried out very efficiently ; and this is the best preventive of subsequent ear trouble. The mother should keep a watchful eye on the condition of the ears, and if the child shows pain on manipulation when she cleanses them, or makes any complaint about them, or if there is the slightest sign of any discharge from them, she should make this known to the doctor ; and she should also note and report any sign of tenderness or swelling of a joint.

The greatest care should be taken during convalescence to avoid chills, especially during the time that “peeling” of the skin is progressing, however slight this may be, in the cracks and folds, &c., since the kidneys are very liable to inflammation. Any puffiness or swelling of the face or body, especially with pallor ; or scantiness of the urine, should at once be reported to the doctor.

Disinfection of the Room and its Contents.—The disinfection of the room and its contents will be effected when the doctor orders this. It will be undertaken by the sanitary authorities in the majority of cases. If it has to be done by the family it will be best managed according to the following directions.

The child should have a hot bath, for which a mild carbolic soap

may be used, and the head must not be forgotten. He should then be wrapped in a blanket or dressing-gown which has not been in the room before, and taken into another room to be dressed in fresh clothes. All his soiled body-linen and bed-linen should be put to soak in disinfectant and boiled.

All brass fittings, such as bed knobs and door knobs and fire-irons, &c., should be smeared with vaseline to prevent tarnishing, and afterwards washed with strong disinfectant and well scoured. All the furniture should be drawn away from the walls into the centre of the room. The bedding and all clothes and linen already out, and from the drawers, which cannot be soaked in disinfectant and boiled, should be unfolded and hung separately about the chairs, &c. The windows should be tightly shut, and strips of paper should be pasted over the sashes and over the cracks of all doors except the one for exit from the room. The fireplace and chimney opening should be closed by pasting paper over them.

In order to render the fumigation effective, the atmosphere of the room must be moistened as follows. The floor and the walls must, by means of a watering-can or garden-spray, be well sprinkled with water. If papered, in scarlet fever cases, the paper must be removed and burnt and the room re-papered; the ceilings re-washed and woodwork repainted after the disinfection. A couple of pails of water should then be stood in the room.

Sulphur is the simplest and least expensive disinfectant to use for the disinfection, and it may be procured either as sulphur "candles" or sulphur by the pound. The amount of sulphur required will depend on the size of the room; roughly, it is about three pounds to 1000 cubic feet of space. This point the mother had better refer to her doctor. Take a good-sized zinc bath or a large bucket. Stand a large tin, or a flower-pot, or a couple of bricks in the centre of the bath or bucket, or place an old pair of tongs across it. Pour some water into the bath or bucket, but so that the top of the tin or flower-pot or bricks or the tongs are above the level of the water. Place the sulphur in an old saucepan lid or baking-tin. Balance this securely on the bricks, flower-pot, or tin or tongs. Pour a little methylated spirit over the sulphur. Set fire to it, and then quickly leave the room, shutting the door and then pasting paper over the cracks and keyhole on the outside. Leave the room unopened for twenty-four hours.

After this period the room should receive a thorough spring cleaning. All paint and woodwork, the floor, and any Venetian blinds should be washed with Jeyes' fluid solution. All furniture should be washed and polished. A fire should be lighted and the windows thrown widely open and kept open for several days. All the furniture and the blankets, mattress, and pillows, and all clean clothing, &c., should be put out in the sun to air for several hours.¹ Toys and books, sponges, hair brushes, or tooth brush or rubber syringes, &c., used by the child during the illness, like floor brushes and cloths, must be burnt.

Disinfectants.—These are liquids as a rule which destroy or nullify the effects of germs. They are generally powerful and poisonous, and in their pure state must not be handled, and in order to make up solutions of them properly the mother must have some exact measure. Disinfectants are used (1) to destroy germs which always exist in an unhealthy wound, which forms matter, or is blood-poisoned. (2) In the first treatment or subsequent dressing of a recently incurred wound, in case germs may have been carried in, in order to prevent their growth there; and in the cleansing of hands and instruments which are to touch such a wound. (3) To destroy germs detached from the body of a patient suffering from an infectious disease. In the first two cases the disinfectants are usually known as "antiseptics," and since they are used on the body much weaker strengths are employed than in the third case, where linen, utensils, &c., are being treated.

In cases which come under the first heading the mother should use *boracic acid*. This is a mild and safe disinfectant and very useful also for its bland and healing effect. It may be bought as a "saturated solution," which only requires the addition of enough hot water to warm it, or as a powder, and in the last case boiling water must be added to make a solution, as it will not otherwise dissolve. Its various uses and strengths are referred to under separate headings in the book.

In cases which come under the second heading the mother should use *lysol*. This does not require to be added to boiling

¹ The blankets and flannel garments should be soaked in warm water containing disinfectant, such as *lysol* (two teaspoonfuls to the pint of water), for two hours before being *washed*. The mattress and pillows should be well sponged with a similar solution, and then well dried and aired again in the sun.

water in order to mix it, and its various uses and strengths are referred to under separate headings.

In the cases which come under the third heading the mother should use *carbolic acid* for cases of infectious disease. *Lysol* may be used for the baby's napkins during attacks of summer diarrhœa. *Jeyes' fluid* may be used for floors and closets, as this is cheaper than lysol or carbolic.

Carbolic acid solutions must always be made with *boiling water*. If this is not used the acid does not mix, falls to the bottom, and may cause severe burns if the hands are put into it. A *one-in-forty* strength is the best for use in the sick-room. A graduated quart jug (see Fig. 17) should be used if possible, and to make such a solution pour in carbolic acid up to the one ounce mark, and fill up with boiling water. There are forty ounces in a quart, and this mixture therefore gives the right strength. In the absence of a quart jug pour carbolic acid into a medicine glass (see Fig. 16) up to the two tablespoonful mark. Tip this into a large jug. Measure four breakfast-cupfuls of *boiling water*, and pour this on to the carbolic acid and stir well. Double and treble this quantity may be prepared as required. This solution should be used to moisten the door sheet, and add to the chamber contents; to disinfect the hands, and the utensils and crockery, and body and bed linen which the child has used before they are removed from the room.

Diphtheria.—Diphtheria is always a serious affection, though if *diagnosed early, treated early with antitoxin, and efficiently nursed*, its prospects are usually good. Since the child requires incessant watching, as also careful and regular feeding, and very thorough carrying out of all treatment ordered, the services of a trained nurse, where it is possible to obtain these, will be a great comfort, and in those cases requiring tracheotomy such will be a necessity. If a nurse is in charge of the case, it is incumbent on the mother to see that she has her due hours of sleep and time off for outdoor airing. It is easy during the stress of anxiety consequent on serious illness to forget that this means the preservation of her health; and the caution is necessary, for the best nurses are the most self-sacrificing.

Diphtheria may affect the throat, or the windpipe, or both. In the first case the symptoms are those of an ordinary sore throat;

in the latter those of croup and difficult breathing, and therefore, as has been pointed out earlier, these symptoms *always* call for prompt medical advice. In both types the glands of the neck are frequently enlarged; the temperature may be a little raised, but is not high, but the pulse rate is always markedly increased. In those cases where the throat is affected the little child will usually refuse its food, and the older child will complain of its throat. When the disease affects chiefly or entirely the windpipe, the child may have been noticed to be unwell for a day or two, or perhaps only for a few hours previously, but equally often nothing has been noticed to be wrong with it until it has a sudden croupy attack with difficult breathing.

The essentials to be remembered in the nursing are the probable arrest of the disease in the throat cases if the treatment ordered is efficiently carried out; the heart weakness which *always* exists in this disease, and the risk of *sudden heart failure*, which can only be guarded against by never allowing the child to sit up for at least three weeks—often a difficult matter with a young child, who must therefore never be left alone for one moment—nor allowed to have any exertion or excitement; the use of the bed-pan will be essential, and the child must be fed and throat treatment carried out in the lying position. Also the importance of keeping up the strength, and thereby helping the child to fight the disease by getting it to take its food, must never be lost sight of. The nourishment will need to be given regularly at stated intervals, which will be indicated by the doctor, and if the child is seriously ill these intervals must be observed during the night, whether the child is asleep or not. *To feed the child lying down* the mother should slip her hand under the pillow and raise *the head* a little forward, also turning it to one side, as the spoon or spout of the feeding-cup is placed just between the lips; swallowing movements should be looked for in a patient who is very ill or drowsy, and sometimes gently rubbing the lips with the spoon will evoke them, and the food should be given very slowly in successive small amounts between the swallowings. A napkin should be tucked round the neck to avoid wetting the clothing. There is a great art in being able to only wake a sleeping child partially and just sufficiently to take its food so that it will quickly fall asleep again. The nourishment will consist of *strengthening* liquids and milk diluted with barley water, Benger's food, oatmeal

or barley milk gruels, corn-flour or arrowroot, egg-flip, broths and broth-flip, beef-tea, and meat juice either freshly made or Valentine's will all be suitable. "Oyster eggs" (see *Recipe*) are particularly useful in this disease if the child can be got to swallow them, which with a little management it frequently will. It should be remembered especially in this illness that the nutritive value of the foods given may be considerably increased by shaking raw whites of eggs with the milk given; adding a beaten egg to broths, soups, beef-tea, &c., or Plasmon jelly and cream to these and to gruels.

In those cases where the windpipe is solely or chiefly involved a steam-tent will be ordered, and the temperature of the room will be about 65° F., though the window must be kept open and the room constantly flooded with fresh air. In these cases the child will need the greatest care and constant watching. The nourishment must be given regularly by the clock; the feet and hands must be felt from time to time, to see that they are warm, especially during the hours from one to five in the morning, when the fire must essentially be kept up, and the steam-kettle constantly filled up with boiling water. Any bits of membrane coughed up by the child should be kept in one-in-forty carbolic acid solution (see *Disinfectants*), for the doctor's inspection. A constant watch should be kept on the pulse, and it may well be taken and entered every two hours. The mother should carefully watch in such cases for the signs of difficult breathing, and if this becomes urgent before the doctor's arrival, she should, by vigorously tickling the back of the child's throat, endeavour to make it sick, and as soon as it can be got ready, a teaspoonful of honey made into a paste with alum (see *Medicine Cupboard*) should be given to it, which will sometimes cause it to cough up the obstructing membrane. Failing honey, a thick syrup should be made with sugar and water, and a teaspoonful of this made into a paste with alum given, or golden syrup may be used in the same way. If the doctor should find it necessary to perform tracheotomy because the child's breathing becomes urgently embarrassed, the mother will serve the child's best interests if she can assist the doctor with quiet self-forgotten presence of mind to perform the little operation, which is difficult and almost impossible to do unaided by a second person. It consists merely of making a little opening into the windpipe and inserting a small tube, takes but a few moments, and is scarcely noticed by the child, who is

instantly and markedly relieved as the tube slips in and its breathing becomes quiet and easy.

It is important to realise that when a child develops diphtheria it has received a dose of poison, and that the antidote or particular substance which has the power of rendering the effects of the poison less harmful, or even entirely harmless, is *antitoxin*, which in all cases of diphtheria, however slight, is our first and best treatment. This we inject by means of a needle and syringe beneath the skin, and the earlier in the case antitoxin is used the better the child's chance of recovery, the more speedy and the more free from complications; and not the remotest village at Home or in the Colonies, and no ocean liner, should be without its supply of this. The use of antitoxin has greatly diminished the mortality of this disease, and parents should put no obstacle in the way of its use, but rather urge it in any *suspected* case of diphtheria, as, even if the diagnosis proves wrong, the child can get no harm from its use.

The child should be watched in the latter part of the illness and convalescence for the signs of *paralysis*, which sometimes follows this disease; and should it be noticed to cough during feeding, or the food to return through the nose, or if it is noticed to speak through the nose or squint, this must be reported to the doctor.

Whooping-cough.—This disease generally begins with a feverish cold and a tickling cough, which is often worse at night. Later this tends to come in paroxysms. The child strains as it coughs as though there were some obstruction in the throat; and as the disease progresses has attacks which begin with a series of quick short coughs, the eyes watering, and the face getting red, sometimes purple as these increase in intensity, and end in the long in-drawing of the breath known as the whoop; the attack is often followed by vomiting. Sometimes a whoop first suggests the disease, but in other cases whooping is absent throughout, and it is only by the severe paroxysmal character of the cough that the doctor recognises it.

The temperature of the room should be kept at about 65° F., but abundant fresh air should be admitted, as the attacks are aggravated by stuffy airless rooms. At the same time draughts of cold air falling on the child often excite an attack of coughing, and hence a screen should be drawn round the bed and the door kept carefully shut. Irritation, fits of crying, all excite-

ment and exertion, should be avoided, and *quiet* amusements chosen. In many cases the use of the steam-tent, especially if carbolic acid is included in the kettle (see *Steam-tent*), will greatly aid the child, and sometimes an attack will be cut short if it can be got to take, when one is seen to be impending, a short hot drink of milk and barley water. A kettle should be kept ready boiling, and a hot fomentation wrapped round the throat will sometimes lessen the severity of the attack. It is often difficult when the child is frequently sick to get it to retain enough nourishment; small quantities of strengthening food should therefore be given immediately after an attack. A few teaspoonfuls of fresh meat juice, or Valentine's meat juice (see *Recipes*), broth-flip, egg-flip (hot), or a teacup of warm milk thickened with barley jelly, or in severe cases peptonised milk may be better retained, or Benger's food. In some cases a firm binder of linen or flannel worn round the abdomen prevents the sickness by supporting the stomach during the attack, and this should always be tried.

A certain amount of bronchitis nearly always exists, and therefore, since a severe degree of this or pneumonia are to be feared, chills must be carefully avoided. A light linseed poultice will often give relief, especially towards night; or rubbing the chest and back with liniment (see *Bronchitis*), and the wearing of a light cotton-wool jacket.

It is very important to ensure the child's complete recovery in convalescence, as this is a favourite time for consumption to develop in a child. The greatest care should be taken to avoid chills and overheating in play when the child is weak. It should be much out of doors, except in damp or dusty weather, or when the sun is setting. A change is almost essential, and the feeding and tonics which the doctor orders should be very carefully attended to. These same remarks apply to the convalescence in measles.

Measles.—The first symptoms of measles are usually a feverish cold, with watering and redness of the eyes and a croupy cough, and in a few days the blotchy red rash appears, generally on the face at first.

The essential to remember in the nursing is the complication to be dreaded, which is a combination of bronchitis and pneumonia; therefore every case of measles should be treated as a potential case of pneumonia. The child should be kept in one room, however

slightly ill, at a temperature of 65° F. The room should be darkened, since the child's eyes are very sensitive to light, and they should be bathed daily with a soft rag dipped into a saturated solution of boracic acid with just sufficient hot water added to warm it, or a quarter of a teaspoonful of boracic acid powder in two tablespoonfuls of boiling water allowed to cool. The child should be sponged and rubbed with cold cream, if it is troubled with itching. It should have plenty of warm drinks, and, as the stomach is usually a good deal disturbed and the digestive power lessened, it should be fed on the lines indicated under *Chicken-pox*. If the cough is hard and troublesome, the doctor will probably order poultices for the chest, and a steam-tent will afford the child much relief.

Chicken-pox.—Chicken-pox is a mild disease and usually only troublesome to the child because of the itching it causes; but it requires that the child should be kept in one room, and chills guarded against until the crusts which form on the spots have fallen off. Scratching must be prevented by the wearing of gloves if necessary, since through this troublesome sores are formed. Sponging with tepid water containing two tablespoonfuls of boracic acid powder to the washing basinful of boiling water allowed to cool, will relieve the irritation, and the child should then be anointed with cold cream or boracic ointment.

The diet should be that for *Fevers* (see this), while the temperature is raised, and then for the next few days that recommended for *Feverishness* (see this). The bowels should be kept open with fluid magnesia or salts (see dosage).

The child is infectious until the last scab has fallen off, and other children who have been in contact with the patient should be quarantined for three weeks. The patient should have a thorough hot bath and dress in another room in fresh clothes before mixing again with the household, as after all infectious fevers.

Mumps.—Mumps cause a good deal of pain and stiffness in the neck and jaw; sloppy food should be given while this lasts, and hot fomentations or poultices are most grateful.

The child is infectious for a month from the onset of the illness, and other children who have been in contact with the patient should be quarantined for three weeks.

Typhoid Fever.—This disease, which is rare in young children,

begins insidiously ; the child is unwell, tired, off food, and sometimes sick, complains of persistent and severe headache, sometimes shivers, for some days before definite illness is suspected. The bowels are often obstinately constipated ; sometimes there is diarrhœa instead. The temperature is slightly raised at first, and gets higher each day. This is a long and trying illness, for the child has to be kept absolutely quiet on a very reduced diet for some time after it begins to feel much better.

The essential points in the nursing are to *keep the child very quiet in the lying position*, especially during the second and third and fourth weeks, allowing no movements or exertion, and always using the bed-slipper ; and throughout the illness to *adhere rigidly to the diet* prescribed by the doctor, no matter how little it satisfies the child ; and to *thoroughly disinfect the stools and water* it passes.

In all typical cases of typhoid fever ulcers are formed in the coat of the bowel, which are fully developed during the second week ; and the great danger against which we have to guard the patient is the bursting of one of these ulcers, forming an opening or "perforation" in the bowel wall, which will allow the bowel contents to escape into the rest of the abdomen, and set up a most dangerous form of blood poisoning ; or else the bursting of an artery in the bowel wall softened by the ulceration, causing dangerous internal bleeding. *Sudden movements or unsuitable food* may at any time cause either of these eventualities. Bad cases will need to be fed with measured quantities of food which the doctor will indicate at regular intervals, probably every two hours, and the amount the child takes should be noted on the report. All broths and gruel should be very carefully strained through a piece of muslin placed over the strainer in such cases, and meat juice and jellies and essences will often be ordered iced. It is very important to prevent indigestion and flatulence ; hence milk will sometimes have to be peptonised, or given with citrate of soda, and sometimes whey and cream, or Koumiss will be ordered.

While no exertion or movement must be allowed, it is important to change the patient's position from time to time, and not keep him lying always on his back—that is, he should be gently rolled on to one side or the other and propped in this position with pillows. This is necessary to prevent the occurrence of a low but dangerous form of pneumonia, which may arise in this disease or

any other debilitating condition if the patient lies for long upon his back. The feet also must be *supported* (not *raised*) by placing a couple of pillows against the soles, in order to support the ankles, keep the feet up, and remove the weight of the bed-clothes from the toes; and the ankles should be gently worked by the mother to and fro, and backwards and forwards each day. It is important also to prevent bed-sores by protecting the heels especially, and by cleansing, rubbing, and hardening the back well in its lower part daily (see *Bed-sores*). The free use of sanitas, and of pinol, sprayed, and of eau-de-Cologne or Florida water, and the free admittance of fresh air will help to remove the odour which tends to cling about a typhoid patient.

If the stools are not asked for, for inspection daily, the mother should carefully watch them. They are usually buff-coloured, liquid, and offensive smelling. If material like coffee grounds or curds are noted, the stool must be kept for the doctor to see, who should be sent for at once if at any time blood is seen in the stools.

Disinfection of Stools and Urine.—In cases of typhoid fever the infection lies chiefly in the stools and water, and hence these must be disinfected with especial care. *One-in-twenty* carbolic acid solution should be used for this purpose—that is, one ounce of carbolic acid in one pint of boiling water. Measure one ounce of acid, and fill up to the twenty-ounce mark in the graduated jug (see Fig. 17) with boiling water; or measure two large breakfast-cupfuls of boiling water, by domestic measure, and pour this on to two tablespoonfuls of acid as measured in the medicine glass (see Fig. 16).

A little disinfectant should be placed in the bed-slipper each time before it is given to the patient, and about as much disinfectant as there is motion should be added to the stool when passed. The cover of the bed-slipper should be fitted on, and it should be covered with a cloth wrung out in one-in-forty carbolic acid solution, and stood for an hour before emptying; and disinfectant, such as Jeyes' fluid, should be ready in the closet to pour into the pail after the motion has been deposited in it. If these precautions are not taken with the stools, not only the household, but individuals far removed from it, may be infected through the drying of the stools and scattering of the germs by wind, &c. The mother should carefully disinfect her hands each time after having attended to the stools.

A "*starch enema*" may be ordered for excessive diarrhoea or

flatulence, to which laudanum or turpentine may be ordered to be added. Pure starch powder should be procured from the chemist, and about a heaped teaspoonful of it should be rubbed to a smooth paste with just sufficient cold water to accomplish this. Boiling water should then be poured on, stirring the whole time, until the starch becomes clear and transparent. It should then be cooled down to blood-heat; and at this stage the drug, *if any has been ordered*, should be added, and the starch, of which two ounces is generally used, should be injected very slowly with a glass syringe.

If the child has a sudden increase of or attack of pain, or shows signs of "collapse," such as shivering, cold sweating, paleness, and a pinched look about the face, sickness, and cold extremities, with a weak, rapid pulse, it should be kept perfectly warm and quiet with the head low, and no other treatment should be adopted, especially no brandy or food given, while the doctor is sent for at once.

The patient's heart is very weak after typhoid fever, and hence no exertion must be allowed on first getting up.

Nursing of Consumption.—The main essentials to remember in the nursing of the case are (1) The infectious nature of the disease through the material coughed up (or "sputum"). (2) The necessity for a constant and abundant supply of fresh air to the patient; the strict avoidance of "*pre-breathed air*."

A sunny airy room should be chosen, if possible with a balcony. The child should wear woollen underclothing by day and flannel night-garments. Widely opened windows should be the rule day and night, and, when possible, the child should sleep warmly covered and sheltered from possible showers out of doors. The food should be especially nutritious, and, as a weak digestion is common in such cases, it should be especially easy of digestion. Fats, such as cream, butter, bacon-fat, malt and cod-liver oil, and eggs should be given as much as possible. The child should be persuaded to take two or three pints of good rich milk daily in the form of milk drinks, egg-flips, Hygiama, chocolate or cocoa made with milk, &c. Beaten eggs should be given with soups; whites of eggs may be shaken with the milk drunk, and the addition of Plasmon jelly to various foods (see *Plasmon Jelly*) is much to be recommended. The doctor's instructions as to the regular weighing and taking of the temperature and the regulation of the exercise should be carefully followed. Chills must be guarded against with great care,

especially at night when profuse perspiration is very common, and the resulting damp clothes should be quickly changed for warmed dry ones, the child being well rubbed down with warm towels. Sponging is comforting to the patient, and frequent hot bland drinks help to soothe the cough.

The patient should always have by him a vessel containing some one-in-twenty carbolic acid solution (see *Carbolic Acid*) into which he should expectorate, and the contents should be burnt before they have been allowed to become dry. Children should be taught to spit out coughed-up material quickly and not to swallow such, as it is likely to infect the bowel and set up the disease there. It is well as far as possible to use rags as handkerchiefs which can be burnt. If handkerchiefs are used they should be put to soak in one-in-twenty carbolic solution to destroy the germs and boiled before being put into the general laundry.

Since dust is particularly likely to harbour the germs of consumption, all such should be scrupulously removed with a *damp* duster from the room occupied by the patient. That domestic favourite a "feather duster," which merely removes the dust from one spot to another, and the use of which should not be allowed at any time, must be strictly prohibited in these cases.

The floor, which should never be carpeted, should be gone over daily with a cloth wrung out of Jeyes' fluid solution, or, if polished, should be polished daily with a turpentine polish. If carpeted the carpet must be swept daily after sprinkling with the disinfectant solution, and then gone over with the cloth wrung out of the same. A room which is allowed to become in the least degree stuffy, and in which free currents of fresh air are not always circulating, is not only dangerous for the patient but charged with infection for those who enter it. Children should as far as possible be kept away from consumptive patients, who should never be allowed to kiss anybody.

It is important to remember that it is only the *tendency* to consumption, if anything, which is inherited, not the disease itself nor its germs. Therefore *environment*, the word so frequently used in these pages because of its vast importance in childhood, if suitable, may prevent its development. A child in whose family consumption exists or has existed must essentially be brought up in a fresh-air existence. Its nutrition must, from the beginning, be a question of first importance. If it cannot be breast-fed, its feeding must

essentially include the materials which will build up sound bone, and hence a broad healthy chest, and also ensure the child a good resistance to disease; and as it grows out of infancy, its good chest development and deep breathing must be assiduously cultivated, its good nutrition ensured, especially in the direction of good firm fat; and weighing twice a year throughout childhood is even more essential than in the case of other children. Children of such a family should live on a dry sandy soil, preferably on high ground, never on clay, or damp, low-lying ground.

If *any* child shows any of the following symptoms, it should be taken to a doctor. If it loses weight and becomes thin after being well covered. If it frequently complains of feeling uncomfortably warm, is inclined to perspire freely in the house, and especially at night, and complains of feeling shivery. If it is noticed to be frequently short of breath on slight exertion. If it develops a slight *dry* cough, which persists, or, in the absence of a cold, is often hoarse, especially towards the end of the day. If it has a continuous cold. If, especially about the time of puberty, it is anæmic, has a poor appetite, and is very easily tired, and in the girl, if the monthly period with such symptoms, having been once established, becomes scanty. These symptoms may have no connection with the onset of the disease under discussion, but since they may belong to its initiation, advice should always be sought, for it is a disease for which treatment in its early stages promises good hope of complete recovery.

Malaria.—The prevention of malaria becomes a question of importance to mothers who live in malarial districts during the malarial season, and this is best accomplished by preventing the bites of the mosquitoes which convey the infection; and according to many authorities, including that great one Sir Patrick Manson, by the daily administration of quinine as a preventive measure.

Children should not go out after sunset, and, in fact, should be taken indoors a little before this time. They should not be taken when out into low-lying ground where there are trees or much undergrowth, nor near stagnant water or recently cleared bush. It is advisable for them to wear, more especially as newcomers to the district, stockings instead of socks, boots instead of shoes, never short sleeves, and, as far as possible, gauze veils and cotton gloves, since stray mosquitoes are always about during the daytime. They should sleep upstairs in a room with an aspect removed from the

garden or trees, and from standing water in open tanks, tubs or ponds. Mosquito-nets should most essentially be used at all times when the children are sleeping, and efficient mosquito-netting blinds or wire-gauze screens should securely cover all open windows and outer doors. Pyjamas should be worn well covering the legs and arms at night, and the hands and face and neck may be smeared with oil of lavender.

Euquinine, which is a tasteless preparation of quinine and reliable, is the best form in which to administer quinine to children. It should be given after a meal in a drink of milk. Half a grain should be given daily under one year ; one grain up to two years ; and two grains up to five years. If quinine is used, and children soon become accustomed to its bitter taste, it should be bought in powder, because it will keep better so, but should always be given in fluid *as a drink*, since it is more effective so, and also upsets the stomach far less. Pills and chocolate tablets are not to be recommended ; nor ordinary tabloids unless these last are powdered for use. The quinine should be given in the same doses as euquinine, and after a meal, and is best given well stirred up in a drink of milk, or, if preferred, in a little sweetened orange or lime juice and water. Sometimes the quinine may be better given, in the case of the older child who has become accustomed to it, in a single three or four grain dose once a week. Nausea or vomiting, giddiness, singing in the ears, or deafness, or a rash, would be indications to stop the drug for a time. Where the stomach is upset, if a smaller dose of say half a grain is given at first the child may often be brought gradually up to the larger dose. The child's bowels should be kept well open, and it is advisable to give a weekly dose of salts or magnesia. A low poor condition of health should be avoided as far as possible by getting the child to take a due amount of food, and suitable tonics to counteract the exhaustion and loss of appetite consequent on the hot weather ; and while outer clothing is as light as possible, woollen under-garments should ensure the avoidance of chills.

Recognition and Nursing of Fractures.—A fractured limb may be suspected if after an accident or fall the child screams with pain and continues to scream. Sometimes the limb hangs helplessly when broken, or its shape may be peculiar. Such a limb should be kept absolutely at rest, and raised, and not examined at all, until

the doctor comes, since if it is moved about or used the jagged ends of the broken bone will do much harm to the soft parts surrounding them. If the child is restless and insists on moving so as to disturb the limb, or if it has to be carried home, or to the doctor, the injured limb, which must only be moved with two hands grasping or supporting its two opposite ends, so as to keep it level, should be strapped to something long and rigid, such as a strip of stout cardboard, a rolled-up newspaper, a piece of plank, a bough of a tree, a walking-stick or umbrella. If a leg, the two legs may be tied securely together; if an arm, it may be placed against the side and strapped to the body. In all cases handkerchiefs or neckties may be used to strap the limb to the splint. The child should not be undressed or given food, as the doctor will probably give chloroform to set the limb.

When the limb has been set, absolute rest for a certain length of time is essential. There is always a certain amount of restlessness and pain after such an injury, but if there is severe pain, or if the mother notices swelling or blueness of the fingers or toes, she should let the doctor know without delay. If a leg is broken and the child kept in bed the mattress should be firm, and if a thigh is broken sometimes a "fracture-board" will need to be specially made to insert underneath it. The child must be sponged twice daily; if feverish, oftener. *The prevention of bed-sores*, which always threaten a person who lies constantly in one position, as in all cases of protracted or debilitating illness, is the essential in the nursing. These are likely to occur on prominent bony parts, such as the lower end of the spine, the elbows, the prominent parts of the hips, between the knees, where the shoulders touch the bed, and the back of the head. The object to be aimed at for the prevention of these is to *avoid moisture* and to *harden the part*. At the daily sponging these parts should be well washed with warm water and soap, well dried, and then dabbed with pure methylated spirit, after which, without drying, they should be well dusted with boracic acid. *If extreme redness is noticed and tenderness of these parts* a small air or water pillow should be procured from the chemist and placed under the spot, and white of egg should be brushed over the part after washing, instead of the spirit, and the part then powdered. *If there are cracks or signs of a sore*, zinc oxide ointment should be freely smeared on and then the powder dusted

on. A thick pad of cotton-wool should be placed between the legs, just above where the knees touch, and similar pads, or a soft pillow should be placed under the ankles just above the heels in all cases, to prevent sores forming in these positions.

To Lift a Helpless Patient.—If the child is big or heavy, two people should accomplish the lifting. It should be raised with one pair of arms (or one arm) under the buttocks, and the other pair of arms (or arm) under the shoulder-blades.

To Make the Bed or Change Sheets for a Patient who cannot be Moved.—Warm the two clean sheets. Remove the upper sheet, leaving the patient covered by the top blanket. Untuck the under-sheet all round. If possible, roll the patient on to one side. Roll up the under-sheet, behind him, lengthways against his back. Take one of the clean sheets and roll it up lengthways, leaving a third of it unrolled. Place the rolled-up part of this sheet against the rolled-up part of the soiled sheet which lies against the patient's back. Smooth out the part which was left unrolled, of the clean sheet, and tuck it into that side of the bed. Now roll the patient back over the rolled-up part of the two sheets on to his opposite side, or lift him while the rolls of both clean and soiled sheets are drawn across under him to the opposite side of the bed. Remove the soiled sheet. Smooth out and tuck in the clean sheet on the other side of the bed. Slip the second clean sheet down under the blanket over the patient, and tuck it in all round. Tuck in the blanket, which has remained over the patient all along, to prevent his exposure and chilling.

In all cases of long or severe illness a *draw-sheet* should be used to protect the under-sheet, in order to prevent the necessity for frequently changing this. An ordinary sheet folded in half broadways or a child's cot sheet used unfolded will serve the purpose. In cases of unconsciousness, typhoid fever or dysentery, or after confinement, the draw-sheet should enclose or cover a mackintosh. The draw-sheet should be placed beneath the patient from the middle of the back to the middle of the thigh. It should be well tucked in to avoid creases; or, in cases where there is much restlessness or tossing, secured to the under-sheet with safety-pins.

Arrangement of Pillows.—There is a great art in arranging a patient's pillows comfortably. Unless he is to lie flat without a

pillow or with only one, he should have at least three during the day. These should be arranged in such a manner as to slope upwards, ladder-like from the bed to the bed-head; one pillow fitting into the lower part of the back, a second under the shoulder-blades, and a third or more under the neck and head. A pillow placed under the knees is often very restful to the patient, and relieves backache and the sense of weariness consequent on lying long in one position.

To Shake Up a Pillow.—Hold one end of the pillow with both hands, shake all the feathers well down to the opposite end, then take hold of the opposite end and shake the feathers well back again. Lay the pillow down and pommel and beat it all over to level it. I insert this, because some people do not know how to shake up a pillow, and an invalid's comfort depends not a little upon its effectual accomplishment.

Management of Convalescence.—A patient when sitting up convalescent in an arm-chair should sit on a blanket thrown over the chair first of all, and this should then be drawn round him so as to keep all draughts of cold air out, and the feet should be raised on a high foot-stool. The time of being up should be short at first and only gradually increased. After the exertion of being dressed, some such stimulating drink as fresh tea, soup, or beef-tea will often be advisably given. A child too big to be carried will be most easily conveyed up or down stairs, or out of doors, sitting in a chair, by two people, one on either side grasping the chair legs and back. It is very often advisable to get such a patient out of doors long before he is ready for the exertion entailed in walking there.

CHAPTER XI

FIRST AID IN THE NURSERY

“ Poor stumbler on the Rocky Coast of Woe,
Tutored by pain each source of pain to know ! ”

*Requisites for the Medicine Cupboard, especially for Mothers living
at a Distance from a Chemist*

A clinical thermometer.

A two ounce glass syringe.

A “ medicine glass ” and “ dropper.”

A supply of soft old rag, which has been boiled and then dried,
pinned up in a boiled, dried rag and kept in a closed tin.

A one pound packet of cotton-wool.

A packet of plain lint (for fomentations for unhealthy wounds).

A few bandages, 2 inch and 1 inch width, the latter for
fingers.

A packet of boracic acid gauze *or* picric acid gauze (for dressing
burns).

A box of “ oiled silk.”

A tube of lanoline.

A tube of boracic acid ointment (quarter strength).

A pound of linseed meal.

Half a pound of boracic acid powder.

Half a pound of bicarbonate of soda.

Two ounces of “ salts,” consisting of equal parts of magnesium
sulphate and sodium sulphate.

Half an ounce of powdered alum.

Half-a-dozen five-grain ipecacuanha powders (which keep better
than ipecacuanha wine).

A medium-sized bottle of lysol.

A two ounce bottle of best olive oil.

A two ounce bottle of best castor oil.

A two ounce bottle of castor oil containing 5 per cent. of friar's balsam.

A two ounce bottle of glycerine.

A two ounce bottle of chemist's oil of turpentine.

A two ounce bottle of sal-volatile.

A bottle of fluid magnesia.

A two ounce bottle of dill water.

An ounce bottle of one-in-forty strength carbolic oil (for earache).

A small bottle of essence of peppermint.

A small bottle of spirits of camphor.

A small bottle of oil of cloves (for toothache).

A flask of best brandy.

A bottle of smelling-salts.

Glass-stoppered bottles should be used for fluid medicines, and the solids should be kept in closed tins, and all the medicines should be carefully and clearly labelled. Drops of medicine and brandy should be measured by the "minim measure," which should be supplied with the "medicine glass."

Wounds.—Even the smallest cuts and wounds should be treated "*antiseptically*"—that is, immediately and thoroughly cleansed by an antiseptic solution and kept covered by a clean rag (previously boiled and dried), wrung out of the same for a day or two. The wound might heal without any such treatment, but might, if it chanced to harbour the germs of blood-poisoning or "lock-jaw," set up these diseases. Lysol is the best antiseptic for domestic use, and one teaspoonful of this, as measured in the medicine glass, should be poured into a pudding-basin containing a pint (two breakfast-cupfuls) of hot water. A little of this lotion should be put aside into another basin to be used for dressing the wound. The cut finger should be soaked for ten minutes, or the part well bathed with the lotion, as hot as can be borne, with a clean piece of rag, and all dirt carefully removed. The hot lotion will nearly always check the bleeding, but if this is very free, firm pressure should be applied over a pad of rag to the wound for a few minutes, while the part is raised. A deep jagged cut, especially on the head or face, always needs the doctor's care. A little bit of fresh folded rag should now be wrung out of the untouched solution and placed over the wound, a piece of cotton-wool over this, and then a few turns of a bandage of suitable width should be put on to secure the dressing. The next day the finger

should be soaked again, or the part bathed, in fresh lysol solution, until the rag comes off without any pulling, and then it should be dressed as before. On the third day, after soaking in lysol solution, the finger may be dressed, if it has begun to heal, with a fresh bit of rag soaked in the *castor oil and friar's balsam mixture* (see *Medicine Cupboard*), and bandaged as before. Sticking plaster and vaseline or ointment should never be used for cuts or wounds.

Unhealthy Wounds and Sores.—A boil, or anything in the nature of a gathering, a sore, or a wound which does not look healthy or appear to be healing up well, or which appears to have a tendency to form matter, should never be treated with ointment or vaseline or poultices. It should be "*fomented*" with hot boracic lotion (a dessertspoonful of boracic acid powder to a pint of water) in the manner described under *Fomentations for Unhealthy Wounds* in the preceding chapter. The fomentation should be renewed several times a day, and each time the part should be previously well soaked or well bathed with hot boracic lotion of the same strength.

A wound caused by a rusty nail or knife, or the bite of an animal, should be especially carefully cleansed and *well soaked* in the *hot* lysol solution two or three times a day, and also a finger after a pin-prick or splinter; and if there is any tendency to throbbing or swelling in the part after such a wound, hot fomentations of lysol (a teaspoonful to the pint) or boracic acid should be used frequently as well. Were these precautions always taken many a bad poisoned finger might be prevented. A finger which is undoubtedly "gathering" should be shown early to the doctor.

Styes.—These should be bathed and fomented as above.

Breakings out about the chin and corners of the mouth should be well soaked with olive oil applied on a rag over-night to loosen the scabs, and then well bathed and fomented as above. When the scabs are completely off and the sores look clean, a little boracic ointment (see *Medicine Cupboard*) should be smeared over them twice a day, the sores being well bathed with boracic lotion before each application of this. These sores are often infectious, and hence the child should not be allowed to scratch them nor to use the sponges and towels and handkerchiefs of other children. If they do not heal, or if fresh sores continue to form, it will be necessary to seek a doctor's aid for their cure.

Abrasions of the Skin.—These should be well bathed with lysol solution, and then dressed with a piece of rag soaked in the friar's balsam mixture.

Bruises and Squeezed Fingers.—These should be bathed or soaked in water as hot as can be borne comfortably, and then a fomentation made of wool soaked in warm olive oil, should be applied and bandaged on.

Burns and Scalds.—The part should be soaked or bathed in a mixture of bicarbonate of soda and cold water, used in the proportion of one part of soda in four of water, for ten minutes or so. This will quickly relieve the first severe pain of the burn or scald; and if after soaking pain is still complained of, a little paste should be made of bicarbonate of soda and water and applied to the part on a piece of rag and bandaged. As the pain goes off, the part, unless the burn is very small and insignificant, should be dressed with a piece of boracic acid gauze *or* picric acid gauze (see *Medicine Cupboard*) lightly wrung out of hot water; covered with a piece of "oiled silk," wool, and a bandage. This should be soaked off in a day or two in warm boracic acid solution (see *Unhealthy Wounds and Sores*), and if healing well, boracic acid ointment (see *Medicine Cupboard*) should be applied on a rag. If blisters form, a little opening should be made on one side, to let the fluid out, with a darning needle previously made red-hot in a flame and allowed to become quite cold.

Should a child's clothing catch fire it should be instantly rolled tightly in a blanket or floor-rug and laid on the floor, *with the burning side uppermost*, to put the flames out. If the child's body is severely burnt, it should be placed immediately, completely immersed, in a bath, just warm, into which a teacupful of bicarbonate of soda and a teacupful of boracic acid have been stirred, after being mixed with a little boiling water. The child should be undressed in the bath, the clothes being cut off, and any bits of clothing which stick being left on. It may remain for some hours in the bath, hot water being added to keep up the temperature, but the doctor should be sent for at once. If the child is pale, the pulse weak, and the signs of *collapse* are noticed, sal volatile, or brandy or whisky in warm water should be given, according to the child's age (see dosage of both).

Severe Scalds of the Mouth and Throat may occur from a child

drinking from the spout of a teapot or kettle. The doctor should be sent for at once, and meanwhile hot fomentations should be applied to the throat; olive oil should be given in teaspoonful doses repeatedly, and while a steam-tent is being prepared, the room should be filled with steam by means of the bath and towels as recommended for croup.

The following points should always be impressed on any one who has to do with children:—

Never leave a child for one moment in a room alone within reach of hot water in baths or cans, or of teapots, kettles, or hot-water jugs.

Never allow a fire in the nursery without a *high* and *heavy* fire-guard, nor leave a child alone in the kitchen, or in any room with a fire which is not specially guarded.

Never leave a child alone in a room where there is a lighted lamp, or candle, or spirit-lamp *within its reach*. Never use a spirit-lamp unless it stands in the middle of a large tin tray.

Never let a child wear flannelette garments or use flannelette sheets unless the flannelette is of that kind which is especially rendered fire-proof. Flannelette, cotton-wool, and celluloid combs are highly inflammable.

Never let a child play with unused matches.

Shock.—After an accident or severe injury, or after a severe loss of blood, a condition may be produced known as “*shock*.” The patient in such a case shows the signs of severe collapse, and besides a cold skin, hands and feet, with often a cold clammy sweat, breathes feebly or with difficulty. The pulse is weak and quick or may be imperceptible, and the face shows a very pale or greyish tinge.

Whatever the cause of this condition the following treatment should be adopted promptly while the doctor is sent for. The clothing should all be well loosened about the neck, chest, and waist. The lower part of the patient’s body and legs should be raised high up on pillows, and *the head kept low*. He should be covered with blankets warmed if possible, and hot bottles, well wrapped up, should be placed to the soles of the feet and against the sides of the body. Hot fomentations or well-wrung hot sponges should be placed over the heart—that is, over the left breast—while a mustard plaster is being prepared, which should then take their

place. Fresh air should be admitted freely to the patient, and he should be kept very quiet and not be worried by questions.

If the case is one of loss of blood and the doctor has not yet arrived, large injections of one or two pints of hot water containing a teaspoonful of table salt to the pint of water, should be given *very slowly* by the bowel. The patient will often in this case be very thirsty, and should be given water freely to drink to make up for the loss of blood from the body. If after the above treatment his condition is not improved, or is becoming worse, a few drops of ammonia should be poured on to a folded handkerchief or wool and held near his nostrils, and mustard plasters should be placed to the calves of the legs. And *if the case is not one of loss of blood*, brandy should be given, in hot water by mouth if he can swallow; if not, in a teacupful of warm water by the bowel; but brandy must essentially not be given in any case of bleeding.

Bleeding will be best controlled by *pressure*. A thick pad should be placed over the wound and strong pressure should be applied over this, if necessary by relays of people, since it is fatiguing; and this should be kept up till skilled help arrives. If the wound is on a limb, this should be kept well *raised*, and when applying pressure to the bleeding spot, this should always be made *against a bone* if possible.

Sprains.—Sprained joints should be treated with especial care in childhood, in order to get them well as soon and as completely as possible, as disease sometimes starts in a joint after such an injury. A sprained ankle should be soaked at once for half-an-hour in *hot* water, the foot being raised the meanwhile. A hot fomentation (see *Fomentations*) should then be applied and changed every two or three hours. After this the foot should be kept raised and not put to the ground for two or three days, and not then if walking causes pain. On the day following the injury, however, unless there is complaint of pain in the foot while at rest, the ankle should be massaged, by upward stroking movements, making slight pressure, for ten minutes several times a day, and on the third day the child should bend the ankle-joint by moving the foot to and fro, and from side to side, for a few moments. Spongefuls of hot and cold water, used alternately, should be squeezed over the ankle before it is massaged, and it should be firmly bandaged between the intervals of treatment.

Sunstroke.—This may be slight or severe. The child is flushed, its skin is hot and dry, and it usually complains of intense headache. It is generally giddy and staggers, and may vomit, and it may be confused through loss of memory, or may be insensible.

The child should be taken into a darkened airy room, undressed, and put to bed with the head a little raised. A mackintosh should be slipped over the pillow, and the child's head and neck and chest should be sponged all over with water containing vinegar, or ice if possible. If this is not done, or after it is done, cloths wrung out of cold water and vinegar or ice should be applied to the head and nape of the neck, and repeatedly changed, or, better, ice-bags should be used (see *Ice-bags*). A dose of salts should be given, and the child should be kept very quiet. No brandy or other stimulant should be given.

If the skin remains hot and the face crimson or purple, and the child does not quickly regain consciousness after the above measures of treatment, it should be sponged all over for fifteen minutes with cold water (see *Sponging*), and if this after a quarter of an hour's wait does not cool the child and improve its condition, and medical assistance has not arrived, it should be put into a cold wet pack (see this) for *ten minutes*; the ice-bags or cold cloths being kept on the head and nape of neck. The pack should be repeated in twenty minutes if the child is not better; but while the continuance of a high temperature is undesirable, the mother must remember that if methods of reducing it are used indiscriminately and used too long it may be reduced too far and cause collapse. Therefore repeated short packs at intervals are preferable to a prolonged cold pack.

After a sunstroke the child should be kept very quiet in bed for several days, or longer if the headache continues. Such a child, who has usually an especial susceptibility to the heat of the sun, would be much better sent to a temperate climate, and is not a suitable subject for the tropics. Shady pith-hats should be worn, and the child should be guarded from exposure to the hot sun as far as possible, and its bowels should be kept well opened. Children should never be allowed to play about in a hot sun in cotton or open-work hats and bonnets, and shady straw-hats which are well secured should always be worn.

Milder Heat-stroke.—In some cases, where a child is delicate

or exhausted from the summer heat, exposure to the heat of the sun may produce symptoms somewhat different to those given above.

The child's face is *pale* rather than flushed, and the skin *cold*, and the child would seem to be faint, and may be unconscious.

It should be laid flat in the shade or in a darkened room. Its clothing should be loosened. Sal volatile (see *Dosage of Sal Volatile*) should be given in warm water, and a few drops of ammonia on wool or a handkerchief should be held near the nostrils. The child should be put to bed as soon as possible and kept quiet, and cold cloths or an ice-bag should be put to the head to relieve the headache which often follows.

Fainting.—The patient turns pale, generally feels sick and giddy and helpless, and becomes unconscious. The skin is cold, often there is a clammy sweat, and the pulse is weak or not perceptible. The patient soon begins to show signs of returning consciousness, and after being a little confused recovers often with a headache.

The child should be laid flat on its back with the head turned to one side, without a pillow, and the clothing should be loosened, especially the corsets in older girls. The child should be covered warmly with a blanket or rug, and a well-covered hot-water bottle should be placed to the feet. All the windows and doors should be opened, the child should be fanned, and people should not crowd round to deprive it of fresh air. Smelling salts or a few drops of ammonia on a piece of wool or handkerchief should be held to the nose, but not allowed to touch it, and the feet and hands should be rubbed. As soon as the child shows signs of coming round, and not before, a teaspoonful of sal volatile should be given in a wineglassful of warm water slowly with a teaspoon.

If the child is long in coming round, or if when conscious it continues to show signs of faintness, and usually of breathlessness, it is probably a "heart attack," and pending the doctor's arrival brandy (see dosage of this) should be given in warm water by mouth, or, if unable to swallow, in double quantity by the bowel, and a mustard plaster (see this) should be placed over the heart—that is, over the upper part of the left breast.

It is advisable always in the case of older children or adolescents after a faint to see a doctor, since it may be due to some unsuspected weakness of the heart, or to a run-down condition of health.

In the case of younger children who faint advice must essentially be sought at once.

Fits.—Fits sometimes occur in older children, and these very essentially require medical care and direction of the child's diet and habits of life, besides drug treatment. The child sometimes cries out, falls, becomes unconscious, and after more or less twitching becomes rigid, with the face blue and the teeth clenched.

Other children should be promptly sent away. The child should be laid on its back *with the head well turned to one side*, at a safe distance from fire or furniture. A tightly rolled-up handkerchief, or a spoon handle, or a cork with a long string tied round it, should be slipped into the mouth *between the back teeth* to prevent the teeth closing on and biting the tongue, and the clothing round the neck and waist and chest should be loosened. The child should be watched, but kept quiet during the semi-consciousness which follows the attack.

Head Injuries.—A child who has fallen and received a blow on the head always needs very careful watching. If the blow was severe, or if the child is drowsy, it should be kept lying perfectly still on the back, or, if unconscious, on its side; and the head should be kept low if the face is pale, but slightly raised if it is flushed, until the doctor sees it. Cold cloths or sponges wrung out of cold or iced water should be applied to the head and changed repeatedly, or better an ice-bag (see *Ice-bag*), and one should also, if possible, be placed to the nape of the neck. The child should be warmly covered with a blanket, and a well-wrapped-up hot bottle should be put to the feet, and one to each side of the body. It is of the greatest importance to keep the child absolutely quiet and the room darkened, and to avoid giving any brandy or other stimulant. If the doctor cannot arrive for several hours a dose of salts should be given (see dosage) if the child is conscious, or a teaspoonful of glycerine in a tablespoonful of warm water by the bowel, if not. Should its breathing and pulse begin to fail or cease, artificial respiration (see this) should be done, steadily and quietly, until help arrives, and warm salt solution (see under *Collapse*) may be injected by an assistant very slowly into the bowel. In the majority of cases absolute quiet, with cold to the head and careful attention to the position of the child, will be the only treatment necessary or advisable. Vomiting is common.

It should be impressed upon servants and older children that they must immediately report a fall or other accident, and may do so without fear of scolding. Young children should never be left alone in an upstairs nursery with an open lower window-sash unless rails are fixed across, or, which is very advisable, the windows are placed high; and it is wise to have a gate across the head of the stairs.

Choking.—A child sometimes swallows some object too large to pass down the throat, or chokes while eating. The finger should be immediately pushed back along one side of the tongue and swept round the throat as far down as possible, in the hope of reaching and hooking out the object. If unsuccessful, the manœuvre will generally make the child retch, and this may expel the obstruction. If not, a cup of warm water containing a dessertspoonful each of salt and mustard should be prepared, and meanwhile the child should be thrown quickly forward on its stomach over the lap or the padded arm of an arm-chair or the seat of a chair, with its head hanging down, and given one or two smart blows on the back between the shoulders. While in this position the mother should pass her finger up into the back of the throat and endeavour to hook out the object. The emetic should be given, and, failing this, one or two of the five-grain ipecacuanha powders at intervals of ten minutes. If these fail and the child is getting blue and struggling for breath, the mother should do artificial respiration until the doctor comes.

Artificial Respiration.—Everybody should know how to perform this simple method of maintaining failing respiration, and often of restoring it after it has ceased, as cases of drowning and suffocation from other causes are not rare.

The child should be laid on a table or on the floor. A pillow or rolled-up garment should be placed *under the shoulders*. The clothes about the chest and waist and neck should be well loosened. *The head should be turned well to one side*, and the tongue should be grasped with a handkerchief and pulled well forward. The mother, standing or kneeling behind the child's head, should seize both arms just above the elbows. She should then draw the arms up slowly over the head till they are extended in a straight line with the body, then pause for a second or two, and then bring them back again downwards and forwards, finishing by pressing the child's arms

forcibly against the sides of the chest. After waiting a second or two she should repeat the movement. She should not work hurriedly, as ordinary breathing must be imitated, and this only takes place in a child about twenty times a minute; in adults about eighteen times a minute.

It is of the greatest advantage, if a second person is present, for her to fill her lungs with a deep breath of fresh air, and, putting her



FIG. 30.—Artificial respiration : First movement.

mouth against the child's, to blow into it (as in cooling food) each time that the mother brings up the arms, and then to quickly remove her mouth before the arms are brought down again. She should also see that the child's tongue has not fallen back, as in all cases of unconsciousness it is apt to do, so as to block up the airway; and if it has, she should catch hold of it with a handkerchief and pull and hold it forwards.

The first movement (see Fig. 30) is intended to expand the chest and allow the air to rush in; the second movement (see Fig. 31) is intended to compress the chest, so that the air, by means of the

pressure of the child's arms against the chest, is squeezed out again.

Drowning.—In cases of drowning the child should first be turned over on its face, or held up by the heels, to allow any water to flow out, and the mouth and nose should be cleared out. Artificial respiration should be done as above, and life not despaired of *for*



FIG. 31.—Artificial respiration : Second movement.

three hours, and after breathing has commenced again for some little time longer. This is very tiring, and relays of people if present should undertake it. Warmth is very important if some one else is at hand to attend to it. If obtainable, warmed blankets or rugs should cover the patient, stripped as far as possible of wet clothing, or, in their absence, coats or skirts. The legs and lower part of the body should be warmly wrapped up, and hot bottles, if obtainable, placed to the feet and inside of the thighs. A mustard plaster may be placed over the heart, and one to the calf of each

leg. The face and lips should be rubbed vigorously from time to time by some one else, while the artificial respiration is being done. Warm stimulating drinks should be given as soon as the patient is conscious, but *the first essential is to restore the breathing and the body-warmth.*

Little children should never be let out of sight for one moment within access of baths of water, garden tubs, open tanks, or wells, or, of course, of larger collections of water, or running water. Not a few tragedies have occurred, one within my own experience, owing to neglect of this precaution, and to forgetting the rapidity with which a small child moves to execute a suddenly conceived plan or desire to explore.

Bleeding from the Nose.—A sudden bleeding from the nose which ceases will not do the child any harm ; but, if the blood continues to ooze and dribble from the nose, the head must be *bent well back*, and kept in this position. If it does not cease, the arms should be raised above the head. A cold sponge should be applied to the nape of the neck, and a cold cloth to the forehead, and the feet and hands should be soaked in hot water ; and if alum is at hand a pinch of this may be sniffed up the nostrils. If this fail a doctor should be sent for, and in the meantime the nose should be pinched between the finger and thumb, and slight pressure maintained on it. Bleeding from the nose is not infrequently a symptom of an on-coming fever.

Bleeding after a Tooth Extraction.—If a severe bleeding occurs from the cavity left after a tooth has been extracted, water, as hot as can be borne, should be held in the mouth for a few moments. If this is not successful, the bleeding will be best controlled, pending medical advice, by inserting a small pledget of cotton-wool into the cavity, placing over this a larger one, and then applying firm pressure by the finger-tip. If alum is at hand, a pinch of this should be dusted into the cavity before the wool is inserted.

Snake-bite.—The first aim in the treatment of snake-bite must be *instantly to cut off all circulation in the part*, and so prevent the poison from being carried to the heart. If out of doors, a handkerchief should be torn into strips (the narrower the ligature the firmer it can be tied), or strings should be torn off the clothing, or bootlaces may be employed. Indoors, string or tape may be used. These should be tied tightly round the part above the

wound—that is, between the wound and the heart, and several ligatures may be applied at intervals up the limb. The wound should then be sucked or cauterised, after, if possible, enlarging it by a small cut with a penknife. The person sucking the wound should immediately spit out the saliva, and rinse out the mouth with water, or, better, spirit, each time the wound is drawn. To cauterise, which should be done in any case after sucking, a match may be lighted and put down, burning, into the wound to frizzle it; or a thick needle or wire made red-hot, or a hot cinder may be used. Equally well one may use a drop of strong household ammonia, or a drop of pure carbolic acid; or, if at hand, strong nitric acid may be applied on the end of a match, and well rubbed into the wound. The child should be given a teaspoonful of sal volatile in a wineglassful of water, or two teaspoonfuls or more of brandy in a little hot water. This should be *repeated freely* if the child shows any signs of faintness, pallor, or unconsciousness; in the last case double the dose in double the quantity of warm water should be given by the bowel. People who live in snake-infested districts should possess Sir T. Lauder-Brunton's little snake-bite antidote case. This, which consists of a small lancet for enlarging the wound, and crystals of permanganate of potash for rubbing into it, can be obtained for a shilling or two, and is an antidote to all kinds of snake-bite. The little apparatus, which has saved many lives in India, is now carried by the police in Rhodesia.

Stings of Bees and other Insects.—These are very painful, and may be poisonous. If the sting can be seen it should be removed by a pair of fine tweezers; if not, a key should be pressed firmly over the part to make the sting rise up. If this is not successful a bottle should be almost filled with hot water, and the part pressed firmly over the mouth of the bottle. This will often raise the sting (and also a splinter), so that it can be removed. A drop of Scrubb's ammonia or a few drops of sal volatile should then be dropped on the spot to remove the pain; after which a little paste should be made of bicarbonate of soda and sal volatile, laid on a rag, and applied to the bite, or, if these are not at hand, a "blue bag" may be applied or the cut surface of a raw onion.

Foreign Bodies: In the Eye.—If the child gets something in the eye, the upper lid should be pulled up and the lower lid down and

a search made for the body, and, if seen, it should be removed with a moistened camel's-hair brush, or the corner of a handkerchief twisted up and wetted. If not seen or removed thus, the eye should be held over some sliced onions, which by causing it to water may wash out the particle. If this is not successful, after trying to remove it by pulling down the upper eyelid by the lashes over the lower, or by closing the opposite nostril and making the child blow down forcibly through the nose, a drop of castor oil should be dropped into the eye. This should be done by pulling down the lower lid with one finger and pressing up the upper lid with another, and letting a drop of the oil fall into the outer and lower corner of the eye, keeping it open till the oil has washed across the eye-ball; the eye should then be closed, and a pad of cotton-wool placed on the lid and lightly bandaged on.

In the Nose.—Children sometimes push buttons, beads, peas, and other seeds into the nose. If the body can be easily seen it may be removed with a fine pair of tweezers, but *no attempt* must be made to *search for it* with these. If it cannot be seen, pepper should be scattered about the child so as to induce sneezing; or the opposite nostril should be closed while the child is made to blow the nose vigorously. If unsuccessful, a doctor should be consulted as soon as possible.

In the Ear.—A foreign body in the ear should *never* be searched for with tweezers, hair-pins, or other instruments, as serious injury may be done. A teaspoonful of warm olive oil should be poured into the ear, while the child holds his head towards the opposite side. After five minutes the head should be turned to the affected side and the head should be smartly tapped on the opposite side, in an attempt to dislodge the body. If it is certain that the foreign body is an insect, after the warm oil has been instilled, the ear should be gently syringed with warm water; but syringing should not be used in any other case. If the foreign body is not forthcoming, medical advice should be obtained.

If the child has swallowed a marble, coin, bead, or other object, and shows no bad effects, it should be fed freely with bread and milk, porridge, milk puddings, or similar soft food, and should not be given any aperients, and the motions should be examined for the object.

Swallowing a Fish Bone.—A simple and often very effective

treatment in such a case is to make the patient, immediately the bone is felt to have stuck in the throat, swallow a good-sized piece of dry bread without chewing it up, followed by one or two more, if the first is not successful, and then take a long drink of water.

THE COMMONER FORMS OF POISONING

With regard to poisoning, the propensity of small children for tasting things should not be forgotten. The following especially, many of which are common sources of poisoning, should never be left about within their reach:—Powders used for domestic purposes, such as “salts of sorrel” and “salts of lemon”; rat paste, fly papers, and other vermin-killers, which often contain strychnine, arsenic, and phosphorus. Poisonous fluids, such as “spirits of salt,” Scrubb’s ammonia; strong corrosive disinfectants such as carbolic acid; liniments meant for external use; photographic chemicals, and essence of almonds, which may cause prussic acid poisoning. Bottles of medicines, such as paregoric, chlorodyne, or laudanum; Easton’s syrup and other tonics containing strychnine or arsenic, sleeping draughts or pain-relieving mixtures, which often contain opium and heart-depressant drugs. Children should be taught not to taste berries during rambles, and plants bearing poisonous berries, especially the shiny black berries of the deadly nightshade (a bush with purple bell-shaped flowers), should as far as possible be excluded from gardens. Special care should be taken in regard to the *foods* later mentioned, which are especially likely to cause food-poisoning.

The essential in all cases of poisoning is to *find out, if possible, what the child has taken*, by smelling the breath and questioning the child; *to send for the doctor*, stating in the message the nature of the poison if known. *To make the child sick* in all cases except those in which a “corrosive” poison has been taken, which is shown by a whitened condition of the burnt mouth and lips. *To give an antidote*, or particular substance which is known to have the power of counteracting the harmful effects of the poison, if such is at hand. Then *to treat the effects of the poison* by remedies such as raw whites of eggs or oil for the burning of carbolic acid, ammonia, &c.; and a steam-kettle for the difficult breathing which may follow such corrosive poisons. Or by adopting “stimulant

treatment" in order to keep both heart and breathing working. *Heart stimulants* for the collapse (weak rapid pulse, faintness, clamminess, &c.) of many poisons such as the corrosives, and for the powerful depressant effect on the heart of such poisons as prussic acid, "salts of sorrel" and "lemon," and chloral. *Breathing stimulants* and artificial respiration for the weak or failing breathing of prussic acid, opium, over-dose of brandy or whisky, gas-poisoning, &c.

To Make the Child Sick:

Tickle the back of the throat vigorously with the finger.

If the above does not produce vomiting, give a five-grain ipecacuanha powder (see *Medicine Cupboard*), and repeat, up to three powders, at intervals of ten minutes until child is sick, also tickling back of throat with finger ;

or

Mix a dessertspoonful each of mustard and salt with a tumblerful of warm water, and if child refuses this, roll him in a towel and give it spoonful by spoonful until vomiting ensues.

To Stimulate the Heart:

Wrap child in hot blankets.

Put hot bottles or bags *well covered* to the feet and sides of body.

Put a mustard plaster over the heart and on the calves of the legs.

Give a teaspoonful of sal volatile, or from two to four teaspoonfuls of brandy, or both, in a wineglassful of hot water by mouth if able to swallow, or double the doses in double the quantity of water by the bowel, if not.

Give a teacupful or two of hot *strong* black coffee by the mouth or bowel.

Hold a few drops of ammonia poured on to a handkerchief or wool near the nostrils.

Give a hot mustard bath (comfortably warm to elbow; two tablespoonfuls of mustard), for five minutes, especially to a young child, and then wrap in warmed blanket.

To Stimulate the Breathing:

Pour hot and cold water alternately on to bared chest and head.

Flick chest and face with a cold wet towel.

Rub the lips briskly with a rough towel.

Give two teaspoonfuls of sal volatile in a teacupful of water by the bowel.

Hold a few drops of ammonia on wool or handkerchief near the nostrils.

Do artificial respiration.

Ammonia or Potash.—Mouth and lips burnt, and showing whitened patches. Child vomiting and in severe pain. Suffocating cough and difficult breathing. More or less collapse.

Give no emetic. Give one or two tablespoonfuls of vinegar or of lemon juice in a tumblerful of water (antidote). Give raw whites of eggs or olive oil, as much as child will take, in successive small drinks, or, failing these, milk. Start steam-kettle. Hot blankets and bottles.

Carbolic Acid or Lysol.—Mouth and lips white and hardened and severely burnt. Severe pain. Great collapse and early insensibility in many cases.

Give no emetic. Give brandy or whisky in water freely (antidote). Give a dessertspoonful of "salts" in a tumblerful of water (antidote). Give whites of eggs, or milk as much as possible. Do not give olive oil. Hot blankets and bottles, and artificial respiration if breathing is failing.

Spirits of Salt (*Hydrochloric Acid*).—Severe pain and vomiting. Great collapse.

Give no emetic. Give as much as the child will take of bicarbonate of soda, or washing-soda, or sal volatile—of each a dessertspoonful to the tumblerful of water (antidote). Or give tablespoonful doses instead of lime water or fluid magnesia (also antidote). Give freely whites of eggs, or frequent small drinks of olive oil. Hot blankets and bottles for collapse.

Poisonous Preparation of Mercury used as antiseptic, in Blue or Violet Tabloids (*Corrosive Sublimate or Perchloride of Mercury*).—Mouth and lips white. Vomiting and severe pain. Profuse diarrhoea. Collapse; sometimes convulsions.

Give as much as the child will swallow of raw whites of eggs (antidote). Then give an emetic, such as a five-grain ipecacuanha powder, repeated if not effectual once or twice at intervals of ten minutes; or a dessertspoonful each of salt and mustard in a tumblerful of warm water, tickling the throat. Give brandy or whisky in warm water for collapse. Hot blankets and bottles.

Salts of Sorrel or Lemon (*Oxalic Acid*).—Mouth sore and usually white. Immediate and severe collapse. Vomiting and purging as a rule. Severe pain.

Do not give bicarbonate of soda, washing-soda, or sal volatile. Knock pieces of plaster or whitewash from the walls or ceiling and give this freely mixed with water, or, better still, if lime water or precipitated chalk (antidotes) are in the house, give these abundantly. Then give a dessertspoonful of castor oil to clear out the bowels. Warmth, and brandy or whisky in warm water, by the bowel, not mouth, for collapse.

Arsenic.—This is usually taken from a medicine bottle, or as “sheep dip,” or as vermin- or weed-killer.

Vomiting and diarrhoea with much straining. Pain in the stomach and often painful cramps in the legs. Faintness.

Give an emetic, preferably one or two five-grain ipecacuanha powders, followed by copious drinks of mustard and salt water, and well wash out the stomach thus. Then give tablespoonful doses of fluid magnesia. Warm by hot blankets and bottles, and a teaspoonful of sal volatile in a wineglassful of water or brandy or whisky and water for collapse.

Phosphorus.—This is usually taken from sucked non-safety match-heads, or from eating rat paste.

The breath smells garlicky. Vomiting and pain. Faintness. Maybe convulsions.

Give an emetic of one or two five-grain ipecacuanha powders each repeated at intervals of ten minutes; or of a dessertspoonful each of mustard and salt in a tumblerful of warm water, tickling the throat.

Give half a teaspoonful of chemist's oil of turpentine in a tumblerful of milk immediately afterwards, or, failing this, sanitas freely (antidotes). Then give a dessertspoonful of “salts,” and avoid giving the child any oils or fats.

Camphor.—The breath smells of camphor. The child is faint. Skin is clammy. Pulse weak and rapid.

Give an emetic of a five-grain ipecacuanha powder repeated once or twice at intervals of ten minutes until effectual; or of a dessertspoonful each of salt and mustard in a tumblerful of warm water, tickling the throat. Give a teaspoonful of sal volatile in a wineglassful of water, but *not brandy or whisky*.

Laudanum (*or anything containing Opium*).—Drowsiness. Child is increasingly sleepy and difficult to arouse. *Breathing* becomes gradually weaker. Pupils of eyes are *very small*, like pin-points.

If Condy's fluid is at hand, give a tablespoonful or so in a tumblerful of water (antidote). Give an emetic of a five-grain ipecacuanha powder repeated once or twice at intervals of ten minutes; or a dessertspoonful each of salt and mustard in a tumblerful of warm water, tickling the throat. Unless given very early, however, emetics will probably not act.

Keep the child awake by walking it about, supported, as long as possible. Flick the face and soles of feet with cold, wet towels, and smack and pinch the child to prevent it sleeping. Give *strong*, hot black coffee, or water containing a couple of teaspoonfuls of sal volatile by the bowel; *not* brandy or whisky. Hold a few drops of ammonia on wool or handkerchief to nostrils. Pour alternate hot and cold water douches on to the bared chest and head.

If the child cannot be awakened, or is very pale or bluish, put it into a hot mustard bath (just comfortably warm to the elbow; and a couple of tablespoonfuls of mustard) for three minutes. Then do artificial respiration with the child in a warm blanket and hot bottles to the feet, and continue it until help arrives.

Chloral.—This is taken from a medicine bottle, or as tabloids. It is a drug which should never be kept in any household.

The child is drowsy, and very rapidly succumbs to a deep sleep. The heart's action is greatly weakened, pulse slow and feeble.

Give an immediate emetic as in the case of opium.

Keep child strictly lying down, with the head low to avoid heart-failure, but keep him awake by all possible means (see *Laudanum*) short of walking him about. Give *strong*, hot, black coffee by the bowel, with two teaspoonfuls of sal volatile, or give this in warm water. Hold ammonia to the nostrils, a few drops on cotton-wool or a handkerchief. Keep very warm by hot blankets and bottles. Put mustard plasters over the heart and on calves of legs. *Do not give brandy*. Finally, if breathing is failing, do artificial respiration continuously until help arrives.

Prussic Acid.—This is sometimes contained in essence of almonds or photographic chemicals, or may be taken from a bottle of medicine containing it. There is giddiness and staggering, gasping and panting for breath. The child soon loses the power

of movement and lies flaccid, and early becomes insensible. There may be convulsions.

Treat in the direction of *stimulating the breathing* especially, as if this can be maintained until the first shock of the poison is over the child's life may be saved. Give two teaspoonfuls of sal volatile and a tablespoonful of brandy or whisky in a teacupful of warm water by the bowel, and half the quantities of both in a wineglassful of water by mouth if the child can swallow. Pour alternately hot and cold water on to the head and bared chest. Hold a few drops of ammonia to the nostrils. Commence artificial respiration early and do it *continuously*. Get some one else to put a mustard plaster over the heart and to calves of legs.

Belladonna.—This may be taken from a bottle of medicine, or eye-drops, or of liniment, or the deadly nightshade berries may be eaten. The tongue and throat are very dry and swallowing is difficult. Pupils of eyes are large. Child is excited and giddy and tremulous.

Give an emetic of a five-grain ipecacuanha powder, repeated once or twice at intervals of ten minutes until effective; or of a dessertspoonful each of mustard and salt in a tumblerful of warm water, tickling the throat. Give a teaspoonful of sal volatile in brandy or whisky and water by mouth, or, if the child cannot swallow, give double doses of sal volatile and brandy in a teacupful of water, or of *strong* hot black coffee, by the bowel. Keep warm with bottles and hot blankets. Do artificial respiration.

Gas Poisoning.—This may occur where a gas-tap is not turned off properly at night. There is a smell of gas in the room and child's breath. If the child is found unconscious, open all doors and windows, and create a draught of fresh air, or carry child out into the open air. Hold a few drops of ammonia on a handkerchief to nostrils. Put mustard plasters on heart and calves of legs. Place hot bottles to feet and sides of body. Give one or two teaspoonfuls of sal volatile in a teacupful of water or in strong hot black coffee by the bowel. Commence artificial respiration if child does not very soon show signs of improvement, and continue until help arrives.

Tabloids and Pills.—If any tabloid or pill has been taken, give an emetic of a dessertspoonful each of mustard and salt in a tumblerful of warm water, tickling the throat; or of a five-grain

ipecacuanha powder, repeated in ten minutes if not effectual ; when often these will be returned before they have had time to dissolve.

Strychnine.—This may be taken from a bottle of Easton's Syrup, or other tonic containing strychnine ; or as a "vermin-killer."

Repeated convulsions. Increasingly difficult breathing.

Give an *immediate and thorough emetic* of a five-grain ipecacuanha powder, repeated two or three times at intervals of ten minutes until effective ; or a dessertspoonful each of mustard and salt in a tumblerful of warm water, tickling the throat. If far from a doctor and near a chemist, send at once for a quantity of *animal charcoal*, and give this in large quantity to the child ; or, failing this, give a quarter of a teaspoonful of *tannic acid* in a wineglassful of water. Do artificial respiration till help comes.

Food Poisoning.—This is often caused by eating pork in the form of sausages, or pork or other meat pies, or tinned meats, or tinned fish ; shell-fish, especially such as oysters and mussels, and milk or cream, either fresh or tinned. In all these cases the foods do not as a rule bear any evidence of decomposition, but the poison has been formed as the result of this. Mushroom poisoning gives very similar symptoms and requires the same treatment.

The child vomits, has diarrhœa, and severe pain in the abdomen. There are often cramps in the legs. Faintness and collapse.

Give an emetic of a dessertspoonful each of mustard and salt in a tumblerful of warm water, also tickling the throat. If ineffectual give one or two five-grain ipecacuanha powders, at intervals of ten minutes, and try to get the child to drink plenty of hot water, even though it vomits it, to wash out the stomach. Then give two teaspoonfuls of castor oil and put child to bed. Hot bottles and blankets for collapse, and brandy or whisky together with a teaspoonful of sal volatile in warm water by mouth, or, if swallowing is impossible, double the doses by the bowel, in a teacupful of warm water.

PART IV

DEVELOPMENT AND TRAINING OF THE MIND IN CHILDHOOD

CHAPTER XII

EARLY TRAINING

“ I gave thee my whole heart, it needs no concealing ;
Love not of a day, nor a year’s fitful feeling ;
But love that began when all life lay before us,
And love that will last till the grave closes o’er us.”
—*Old Gaelic Song.*

It is essential in any discussion on the lines of development of a child’s mind, and on those therefore which should form the basis of his early training, to understand what we mean by Evolution. Because it is essential and because it brings such a new and living interest into one’s everyday contact with and handling and training of a little child, I am constrained to attempt the difficult task of condensing a great and many-sided subject into a necessarily brief space, and of making a great scientific doctrine, which rests upon scientific proof, comprehensible to those who are in the main unaccustomed to thinking scientifically and unconversant with scientific language. In my sketch of evolution I have followed the lines of Professor Drummond’s wonderful “Ascent of Man,” the study of which I would recommend to those mothers to whom it is not already known.

Evolution is defined by Professor Drummond as the “scientific history of the world.” The derivational meaning of the word is a “rolling out,” or an “unfolding.” Evolution is, in short, the story of the gradual unfolding of humanity as it exists to-day, from the first beginnings of animal life. Finding its commencement in the work of Darwin in the latter half of last century, it owes its development and expansion to the rich and fruitful labours of such thinkers as Huxley, Romanes, Herbert Spencer, Henry Drummond, Browning, and others. The story, which is the “story of Creation,” seems to divide itself naturally into three great chapters, which we may name successively Physical Evolution, Mental Evolution, and Moral Evolution.

In the *First Chapter* we trace the origin of the human *body* through the study of Biology. We learn in the laboratory, with the aid of microscope and dissecting-case, from simple and accessible material affording us types to study, the life-history and structure of the plants with their wonderful passive life and industry. We learn about the tiny living creatures exemplifying the lowest form of life in the great Animal Kingdom (Protozoa or "first animal"), who dwell in our ponds and ditches and in the sea. Creatures like specks of slime or jelly, "without eyes or ears or parts of any kind," who cannot be examined with the naked eye, yet who move and breathe and feed themselves and reproduce their kind. Such as the *amæba*, protruding processes of its own slimy substance as extemporised limbs wherewith to move and secure the food it absorbs into itself; the *noctiluca*, or "minute glow-worm of the sea," of pin-head size, which in its myriads make the silvery phosphorescence seen at night at sea. The microscopic *globigerina*, which builds its minute shell, and forms in its thousands our chalk; and the clusters of flower-like jelly bell creatures drooping their bells on slender stalks in the pond. Thence we trace in gradual ascent through more composite animals built up of many such specks of slime or jelly—such as the sponge animal—those larger jelly animals possessing a hollowed body and mouth like the sea anemones and coral animals; and later gaining other parts, like the mantle-covered, shell-protected oyster, and heads like the snails. From these we pass—studying here and there on the dead bodies of convenient and accessible types, the shapes and functions of the organs of each successively higher form—through the earth-worms; and the crayfish, with their land relatives the grasshoppers, and other insects with their ringed bodies, many-jointed many legs, and active powers of locomotion. Thence we reach the great Backboned family, and trace in it the gradual evolution through fishes, frogs, reptiles, and birds, of the higher four-legged animals who suckle their young, such as the rabbit, to man himself.

We learn through the medium of our microscopes what a "cell" is. That this is but a minute speck of thin, colourless, jelly-like material (or *Protoplasm*), with a covering of gossamer-like transparency (in the plants this covering is thicker and denser), and showing within it a darker spot (the *nucleus*); but this speck of jelly differs from any other in its marvellous endowment of life—in its

power to do something, and to divide and form new cells from itself. We learn that each organ and each separate *tissue* (or material or fabric) used in the building of an animal's body, as of a plant's, is composed of many such cells, differing in the main only in shape and in the work they have to do. Just as a tessellated pavement is made up of many separate tiles, or a mosaic of many minute but definite divisions, so are the body tissues composed of "cells." It is, in fact, a colony of cells—a "great ant-hill of different kinds of cells, each one working to help the colony to live and prosper." We find that the duties of a cell are "to feed, to multiply, and to respond to its outer world" or environment; and in the light thrown by the later study of evolution we shall see that these are the duties shared in common by every living thing on earth, including the microscopic water animal and man himself. We learn also that such a cell forms the complete and mature body of the lowest form of life to-day—such as the water animal; and also that the bodies, not only of the plants but of all the higher animals, including that of the human infant, start at first as a similar cell. That this cell grows and divides, and upon the number, kind, and arrangement of the new cells formed depends the growth of nerves, muscles, lungs, brain and other organs, and also the particular animal which results.

In studying the various types of animals we shall find that each shows some characteristics in its bodily structure which belong to the lower and simpler forms which preceded it, though we shall also find that each type of animal has some special characteristics of its own which were acquired to help it to adapt itself to its environment, or particular needs and mode of life. Thus we trace by very gradual upward stages the evolution of a higher from a lower type. We see that the lungs of the rabbit are a much higher model of breathing apparatus than the slit-like gills of the fish; that the complex brain of the rabbit (and how much more so that of man) with its several parts, each with a separate function, is a much higher type of nervous system than the streak of nervous material which we find alone representing such in the earth-worm; and so on through all the fascinating field of biology.

When we come to study the development of a child's body prior to its birth, we find most striking and interesting proof of the doctrine of evolution, already traced through these animal orders;

for we see that during this period *it* passes through the stages of development which belonged to the lower types of life. That in its earlier stages the human embryo has, like the earth-worm, a primitive streak of nervous material which later gradually develops into the highly organised human brain; that it shows the gill-slits of the fish, which only close beneath the covering skin of the neck as the lungs begin to form. That it has a "tail" later covered by the skin, but distinct enough in the human skeleton. All this shows us the "immense distance man has come," for concentrated into the space of less than a year we can trace "the labour and progress of incalculable ages;" and though we see further in these days of scientific investigation than the old Bible scribe, we wonder no less than he at the great marvel and mystery of birth, and "how the bones do grow in the womb of her that is with child."

In the *Second Chapter* we trace the development of *Mind*, from the first dawn of *instinct* to move and to feed and to reproduce itself in the lowest forms of animal life, through the more perfect degrees of intelligence of the higher animals, to that of man himself; thence from his prehistoric cave-dwelling period, through the days of ancient, medieval, and modern history up to the present day—that is, through all the history of civilisation. We find him evolving for himself houses rather than caves, clothes rather than skins, language rather than uncouth gestures and sounds, writing rather than scattered crude descriptive drawings. The great commercial systems of to-day to supply the needs of his daily life, the great system for the legal control of society and the methods applied to the preservation of its public health; and the accumulated intellectual wealth of prose and poetry and art.

In the *Third Chapter* we trace the growth of the *Moral instinct*, the spark of divinity in man. We see its development in man, first in the struggle of a new characteristic, "*altruism*"—life for another—the law of love—with "*egotism*"—the first primitive life for self; and as the result we find man evolving a recognition of the rights of a community and of the advantages of living in such; the highest type of family life; care for the future of his offspring, and by his numerous charitable organisations the care of his less fortunate fellow creatures. We may read, though the last chapter is not written yet, many pages of the story of the evolution of the highest type of Reproduction and Parenthood—"the blossoming of the individual

life"—from the unconscious forethought of the flowering plants, shown in securing the fertilisation of their tiny rounded seed-bodies or *ovules* by the pollen grains; and their careful provision for their seeds. In the animal kingdom, from the first simple *division of itself*, or *separation of little outgrowths* or "*buds*" from its own body—which set free develop into the parent form—in order to reproduce its kind, of the lowest form of life which is exemplified to-day in the microscopic water animals; and the mere instinct towards an indiscriminate act of union with its own kind, to secure fertilisation by the specially formed male element of the specially formed "female cell," without care for or thought of the offspring, by which the slightly higher orders of life all unconsciously continue their species. Through yet higher types of animals in whom we "find the greatest intelligence among those who take care of their young," such as the bird, who provides a carefully built nest-home, warms her eggs, and seeks food for her young. Through the greater though short-lived maternal care of those higher animals who suckle their young, and nurture them for prolonged periods in intimate connection with their own lives and bodies, until the embryo-life of the young is at an end—such as the dog, who can find "no signs of love more expressive than those which she uses for her puppies—'that short, tender touch of the tongue,' the doggie's kiss." Thence upwards to the long and special preparation, lifelong devotion, and far-reaching responsibility of the human parent, which is and is yet to be.

We find man adopting for himself a standard of life and conduct and ideals, the falling away from which, or imperfect realisation of which, he calls sin. We see in their time and place the old religions of the world; the stern moral teaching of the Old Testament, and in the fullness of time Christianity, in its perfection of altruism, the last and most perfect—the "fulfilment"—of them all.

And when the story of evolution is read we ask what is the final object of this complicated process? Not, in the words of Professor Drummond,¹ "mountain and valley, sky and sea, flower and star, the glorious and beautiful world in which man's body finds its home. Not the god-like gift of Mind nor the ordered cosmos, where it finds so noble an exercise for its illimitable powers," but the human soul as evolved through love. For while we see that "the perfection of man consists in the full development of all his

¹ "The Ascent of Man."

powers, physical as well as intellectual, and of all his sentiments ; in a feeling of affection for the family and humanity ; in a feeling for the beautiful in nature and art,"¹ we know that "human nature is ever climbing up 'the world's great altar stairs that slope through darkness up to God,'" and thus we reach a dim conception of the wonder and beauty of the great ideal to which all creation leads us.

Just as we have seen that the child in the womb, in the course of its development, passes physically through all the stages of evolution, so in its early months and years it passes mentally through the various stages of its "vast ancestral history." We can thus see that, as Spencer says, "the education of a child must accord both in mode and arrangement with the education of mankind, considered historically."² We shall be better able to recognise what we must expect at each stage of its career if we review these stages briefly. We shall see at first the infant without "consciousness of self," who knows only through his senses of taste, touch, sight, and hearing the feelings of pleasure and pain ; whose movements are instinctive—that is, inborn, not intentional ; whose sounds are inarticulate, showing only his pleasure, discomfort, or hunger. The baby who begins to show some intelligence, who "perceives," and recognises his mother when she speaks to him, and to some extent governs his movements intentionally ; who a little later still acquires some slight degree of memory and imagination, as when his cries quicken at the sight of his bottle being prepared, or of his mother leaving the room ; of curiosity, as when he turns his head in the direction of a sound ; later, towards the end of his first year, of imitation, when he will kiss or clap his hands, shake his head, or wave farewell.

The tiny child who, as he learns to know his environment and very slowly gains his social experience, still acts largely instinctively and experimentally as a little egoist to get what he wants, yet reflects, later reasons, and learns by his growing memory and association of ideas to know what the results of his actions will be. Discovers his will, and as far as possible experiments with it ; has his passions and fits of rage when he cannot attain his desires, like primitive man who could only thus preserve his life from enemies. Shows the childish fear of the dark, of shadows, of

¹ M. de Laveleye, *Revue Scientifique*, Sept. 13, 1890.

² "Education."

venturing forth among strangers, and of ugly grotesque forms ; this fear of the unknown, which he shares with savage races to-day, also shows his connection with primitive man and "has its roots in the past." His "social instinct," which we saw in the baby, is slowly but surely developed. He desires companionship, cuddling and loving, and the sharing of all his little interests ; he finds his "oneness with nature," and shows it in his delight and interest in living things. Lastly, and very late, he gains the power of attention and concentration of thought, some degree of control of his will, and develops the beginnings of altruism—the voluntary forfeiting of his own desires in another's interests, and the "recognition of the rights of others." Or, as in the poetical language of Professor Drummond,¹ "The most beautiful witness to the evolution of man is the mind of a little child. The stealing in of that inexplicable light called consciousness, the first flicker of memory, the gradual governanec of will, the silent ascendancy of reason—these are studies in evolution, the oldest, the sweetest, and the most full of meaning for mankind . . . which make every mother an unconscious evolutionist and every little child a living witness to the Ascent."

From the foregoing sketch of the child's natural development, it will be obvious that he comes into conscious life neither exceptionally good nor exceptionally bad. That his morality must be evolved like that of the race, and fostered by a suitable environment—that is, one which not only shields him from bad influences in this his plastic and most impressionable period, and surrounds him with good ones, but which anticipates the needs of each phase of his development, and recognises that he possesses a temperament which he owes to his heredity and which confers on him mingled benefits and disadvantages.

It is important to realise that a young child's instincts and impulses are quite natural to him, and more or less unconscious and involuntary, that, as Sully² says, "Childhood is a disordered jumble of impulses . . . neither very good nor very bad." What the child *is* to be will depend chiefly upon education and training, and these have been well defined by Dr. Salceby as "the provision of an environment."

He, when his life opens—an egotistical little creature very intensely alive, very sensitive to his elemental pleasures and pains,

¹ "The Ascent of Man."

² "Studies of Childhood."

very full of the love of liberty and very unconscious of law,—is the result of both heredity and environment, or, as Galton calls them, his “nature” and “nurture”; but while heredity endows the child with possibilities, it is environment which decides whether they ever develop into actualities or not. And perhaps the more we come to share Froebel’s belief that “surely the nature of man is in itself good, and it is treason to human nature to consider it essentially bad or evil,”¹ the less weight we shall attach to the influence of heredity and the more to that of environment. Hence it will be the duty of the mother, who is the first and all-important educator, “to cultivate the best and suppress the worst which heredity and environment have made him.”

The method by which she is to train the child must be carefully reasoned and thought out, and, when decided upon, carried out on definite and invariable lines. With an absolute lack of impulsiveness, infinite patience, infinite self-control, and a very firm grasp of those principles underlying the formation of character, she must direct the child’s conduct and suggest motives to him, at this time of election while his impulses are natural and his ideas as yet unformed.

The object of a child’s training must be to fit it to take its place in “a society which is based on the principle of individual liberty, and which therefore presupposes its members to possess the virtues of industry and self-control.”² Our part in its training will be, in infancy chiefly the formation of good habits, in early childhood the development of self-control, in later childhood the inculcation of altruism and habits of industry. The child’s strongest characteristic is well said to be his “educability,” and in this he differs from the young of all other animals, whom we can train up to a certain point but no further, and in it we appreciate the divine spark in him which places man above the lower animals. The child is now at his most plastic period, ready to be moulded and made what we will.

“The clay is moist and soft ;

Now, now make haste and form the pitcher, for the wheels turn fast.”

He has no accepted ideas and he has evolved no notions of good and bad ; he is very open to suggestion, and particularly susceptible to imitation, and “he is wax to receive and marble to retain,” for

¹ “Education of Man.”

² W. D. Morrison, “Crime and its Causes.”

he never forgets his early impressions, and to a great extent "what he loves that he becomes." His education begins in his infancy, and the opening years of his life are more important for the formation of character than all his school and after years together; and as an American writer quotes, "The child of six years has learnt already far more than a student learns in his entire university course." If we have but the knowledge and understanding, we may approach our task like the oft-quoted Michelangelo, who, when he saw a block of marble in a quarry, said, "Send that to me; I see an angel in it."

First Lessons in Morality.—The child learns some of his most fruitful and best-remembered lessons in morality in the even and unvarying fairness which those who regulate his life accord to him, and in the love and tenderness which surround him. His social instinct is very strong from his infancy upwards. He loves to find himself in harmony with those around him, and his painful consciousness of having been in trouble and disgraced is not a little intensified by his sense of alienation from his mother and his desire to be forgiven and received back again into loving arms. His sense of genuine affection, too, dawns very early; and very soon after the second year it will aid his conception of right and wrong as that which gives pleasure or pain to those he loves. A tiny girl of two and a half, one of the sweetest children of the writer's acquaintance, after a tussle in the morning had been left rather unusually alone during the day by her devoted and very much beloved father. Nothing further was said to her, but when night came and she was being undressed by her mother, she suddenly caught her hand, and in a voice that was half a sob said, "Go and tell him I'm sorry." It is inadvisable, I think, however, to rely too much on this as the child gets older, when it may sometimes verge on the sentimental, of which the healthy child, especially the little school-boy, is strongly intolerant. The child learns also much by suggestion, and again much by imitation of those immediately in contact with him. Hence the necessity for protecting him as far as possible from seeing or hearing what we would not wish him to reproduce.

The lessons of unselfishness and generosity he can best learn by contact with little brothers and sisters in a common nursery, and this is perhaps one of the strongest and most pressing arguments

against the extreme limitation of families so much in vogue just now. What this loss is to the only child, of the companionship of equals in his early years, what check to his little thoughts and confidences and what loneliness in his play—which is only half play without some one to share it, and robbed of its chief value for him—and in that “immemorial children’s hour,” the hour of falling to sleep at bedtime, perhaps only he can realise. He knows instinctively that he moves in an atmosphere of grown-up ideas and views of life which are foreign to him, and forced on mentally by the stimulation of the many impressions that reach him from it, he gradually adapts himself to it, and so loses much of the charming spontaneity of childhood. He receives again an excess of attention at the hands of his anxious parents, and his little tendencies for good or ill are magnified out of all proportion to their merits, and so he is over-noticed, over-petted, or over-corrected. No little playmates can take the place of his own immediate kin, and he learns best in the tiny rivalries and budding friendships of the nursery the lessons of fair-play, of giving up, and give and take, and the sweetness of “kissing and making friends.” Many lessons too, not only of unselfishness and usefulness to others, but of industry, may the child learn from his Nature study, from the lives of the plants and animals.

The first sense of right and wrong in a small child is associated with that which he is allowed to do and that which is forbidden to him. Thus it is inevitably associated at first with the visible authority of his parents, but at the earliest possible moment the reasons for the prohibitions made and obedience asked of him should be represented to him. Parents not infrequently err here, I think, and would seem to consider that arbitrary commands based upon the divine right of parenthood will shape the child’s necessary obedience and his desire to do right rather than wrong. It will secure obedience for the time being, for “might is always right,” but it will not teach the child the freeman’s moral law—the voluntary obedience to laws recognised as right—nor does it increase his sympathy with and confidence in his mother. I think Miss Wiggin speaks very truly when she says “to check, reprove, and punish does not develop right feeling and good doing, for it stops action, without which there is no development.”¹ The

¹ “Children’s Rights.”

time comes wonderfully early, certainly in the third year, for an appeal to the developing powers of reason and thought and to his own moral sense—his dawning conscience, “the light which may be hidden, but never can be lost.” We should all through the child’s life try, by diplomacy often in the case of the tiny child, or later, by explanations which appeal to his growing power of reasoning, to win him to obey rather than to merely insist upon and enforce the obedience we ask, though this, when actual refusal occurs, will be necessary and wise. The child’s respect and confidence, and, even more, that of the older son and daughter, must not depend, as it too often does, upon the supposed divine rule and right of fatherhood or motherhood, but rather upon the confidence born of the sense of being understood, of real chumship with a superior, all-trustworthy chum, and of the true admiration of love.

Punishment.—That little child whose natural instincts and innate experimental tendencies are well understood and wisely watched and guided, and whose infancy has been regulated strictly by habit, will have little need of punishment. Deliberate whippings and any form of punishment *which implies fear or physical suffering* should emphatically have no place whatever in the scheme of that child’s life, whose parents look for all that is highest and finest in character and feeling, and for the return love and confidence, which is more than name and which lasts beyond the nursery or even the home circle into the after years. For as a modern writer says, “A child never believes in his heart, though he may be brought to acknowledge it verbally, that the blows were due to love; that they were administered because they were necessary . . . for he knows it to be an abuse of power . . . and he will, taught that badness can be cured by blows, use on animals, little brothers and sisters and comrades, the methods applied to himself.”¹ Illness from which we cannot protect the child may too likely bring him the experience of pain, and life holds no greater tragedy than the suffering of a child, but it must never be through us that “pain breaks in, a rude visitant, upon the fairy garden where the child wanders in a dream.”² An old-time father tenderly if bluntly expressed the right sentiment when he said, “Yes, I talk to my boys very much, but I never beat my children—the world will

¹ Ellen Key, “The Century of the Child.”

² R. L. Stevenson, “Child’s Play.”

beat them ;” and Locke the philosopher wrote, “I would never have children beaten for their faults, because I would never train them to think of bodily pain as a punishment,”—and one might add, never set them the example of inflicting it on any living creature. Punishment, if it is to be effectual, must be reformative rather than merely punitive, and if it is to be reformative it must *humanise*, for “justice is never truly just except when its tendency is also to humanise.” I think no one could ever assert that deliberately inflicted physical pain, however slight, could humanise, and while the application of such punishment to animals and children who are unable to retaliate has always seemed to me to be in reality the refinement of cowardice no less than of cruelty, it is its essential inefficacy which I would suggest to parents and also its evil effect as the child grows older, as something which tends to destroy confidence and strain the intimate and sympathetic relation so desirable between themselves and their children.

A far more logical and educative method of punishment than any which is arbitrarily administered is, I think, that which allows the child who plays with fire to burn his finger, and which pulls the hair of the child who similarly treats his pets ; which deprives him of the use of the scattered toys he did not pick up, or the meal he would not eat, and which forces him to stay at home or in bed when he refuses to get ready to go out or to get up. By such a method, in which the punishment has always a clear and definite relation to the wrong action, the child will learn the natural consequences and penalties of those of his actions which are not in harmony with natural or social laws.

Training of the Will and Lessons in Self-Control.—We are usually first aware that a child has a “will of his own” from his fifteenth to eighteenth month. He often cried imperiously for his bottle or to be taken up when wakeful as an infant, but these cries were chiefly instinctive and due to an urgent desire to satisfy hunger or secure change of position or amusement. The little child is now developing true consciousness—that is, “the knowledge of self by the self,” and he is *conscious* of the desire which calls forth the exhibition of his will. His short and decisive “no” is proverbial now, and no less his screams and noisy crying when thwarted. He will also try by many and various procrastinations and all manner of artful excuses to “evade the law.”

Perhaps there is no more important side of a child's moral training than that of the will. Too often do we hear of the necessity to "break this little will." But rather must we allow the child the use of it in order to develop the "power of choosing," and to teach him the "freedom and danger of his own choice," and make every effort in our power to strengthen that which will be, if rightly used, of all others his most useful weapon in the coming battle of life. We should begin at the very beginning to train the will in the right way, and the secret, I think, of such is not only to begin early but to go on on lines which are so invariably the same that the child learns an invariable rule of cause and effect. He may refuse to perform an act required of him either directly or by methods of procrastination, or he may insist on doing what he is not to do. In the first case, if his intention is clear, he should be gently but quickly forced to do what is required of him, if it is essential, and in the second speedily prevented from doing what he wishes. Then when once a point of discipline has been made, when once the child understands that he is not to do or to have a thing, or is to do a thing, the rule must be invariable and he must never be given way to, never indulged, and bribes and rewards—the "sugar-plum education"—must be altogether discountenanced. Neither should a tiny child be punished by smacks and scoldings, either for the exhibition of his will in the first place, or for the resentment with which he sees it overruled, since both of these are essentially natural to him. It is not only natural for him to experiment with his will, but he finds himself out to a great extent by the exercise of it.

Outbursts of passion and temper are the natural and frequent results of the thwarting of his desires in the high-spirited child, and these rightly managed will themselves teach him to develop self-control. They should be taken no notice of at all, the child treated with strict indifference, left absolutely alone to spend himself and recover. After trying a certain number of times and finding he cannot get his own way he will voluntarily renounce it—that is, "learn to exercise his own will for the prohibition of his wrong desires." Good reasons for his obedience should be put before him as soon as he can understand them, and good motives suggested, but not at the time. He learns best through his own experience the necessity to bend his will to an invariable law. The taking of medicines, treatment of the throat, &c., in illness should all

be managed in the same way. The child who is suspicious of and, not unnaturally, refuses an unfamiliar experience should be shown that law is invariable and inevitable, and it is, in my own experience, astonishing how soon he will, even when weighed down with the weariness that illness and confinement means to a small child, offer his throat or open his rosy mouth for the horrible dose. He is essentially a reasonable creature, if only he is allowed to learn consistently what essential rules really are, and I believe that we should hear less often that strangers can always manage a sick child better than its mother if she too realised this.

It is very often possible, and, if so, very desirable, to avoid struggles and outbreaks of temper in a spirited child, by the exercise of a tact which does not place him in the way of something particularly coveted which must be forbidden and by not taking him from an all-absorbing game for his sleep or walk ; and often, especially when little children are playing together, by the exercise of a little diplomacy. When such occur, however, we should act consistently and instantly, as always with a tiny child. In the absence of direct disobedience, continuous and purposeless crying, disobedient worrying and fidgeting, or naughtiness at table should be treated by instant removal, and isolation in confinement temporarily of the child, who will thus realise a very first principle of social ethics, viz., that he may not discomfort others nor become a nuisance to the society of which he is a member. Prompt action, which is on the same occasion invariably the same, will do far more in such cases in the first three years than repeated scoldings, threats which never come to anything, nagging or coaxing. And above all, those things which he cries for should be of all others those which he should never have. It is only the child which is unevenly treated—indulged at one time and severely restrained at another in his pursuit of the same object, who is slapped and scolded for his natural insubordination, which is thereby increased—who becomes intractable rather than indocile, truly unmanageable—the little fiend and well-known household plague, whose incessant worrying and fidgeting, constant crying and whining cause those who have no necessary acquaintance with and but little understanding of children to say they cannot be bothered with children. The physician knows, and does not throw the whole responsibility on this child, whom no coaxing nor bribery nor threats will prevail

upon to "put out his tongue" and "show his throat," and prefers the child whose natural fears of the unknown can be allayed by gentleness, and whose trained habit of obedience renders all force unnecessary in the ordinary handling of mere examination.

It is inadvisable, I think, to teach a child to revenge himself and "beat the naughty table" against which he bumps his head. If life is, as the scientist tells us, an adaptation to our environment or surrounding conditions, and happiness the result of the most perfect adaptation, then the child must learn to know these conditions, and to endure those which are inevitably unpleasant. And we shall do far better to teach him endurance, which is the secret of bravery, and encourage his sense of pride in this, and to accept indispositions and unavoidable discomforts cheerfully, and to "smile at small contretemps."

The importance of the cultivation of the strength of the individual will cannot, I think, be over-estimated for its effects and value in after life. It is not sufficient merely to teach the child the difference between right and wrong; it is essential to develop in him the characteristic which will enable him to choose in the face of the greatest difficulty, and to win through almost the impossible. The brain controls the body, but the will controls the brain and all the thoughts and actions of the individual. We know its power in the fields of medicine, and must we not ascribe the greater part of human wrong-doing, actual crime and misery to a lack of it? If it be true, which I believe it is, that "the gaols, the prisons, the reformatories are filled with men who are there because they were weak more than because they were evil," then we must agree with Ruskin that "crime can only be truly hindered by letting no man grow up a criminal."

Doubtless, physical and mental degeneracy, of which we hear so much to-day, play a part in the production of crime; but the vast majority of children are born healthy, and no child is born a thief or a liar, so that for the chief part unsuitable environment is responsible for the development of bad traits, and perhaps the most salient cause of all is lack of training of the will.

Emotional Outbreaks.—These, which sometimes occur in sensitive, tender-hearted children, require special notice. Such a child feels, by reason of its marked sensibility, reproof and remorse very keenly, and equally the imagined or real suffering or danger to

which those who are strangers to it may be exposed. Such outbursts should never be encouraged; they are best checked at once, for with frequent repetition they sometimes tend, as the child grows older, to become more prolonged and intense, and with the onset of puberty, perhaps more especially in the case of girls, may eventuate in attacks of hysteria.

Such children, who often possess in the highest degree that greatest of all gifts of sympathy—for “in the fear for others is the foundation of love”—must be taught in the reaction time, with tactful suggestion and a firm insistence, the “use and the abuse of the emotions” and the necessity for self-control.

But at the time of the outburst the best treatment is a rapid change of scene and a quick forgetting of what caused it, and the child must not be comforted however much we may sympathise with its distress. These children must be even more rigorously guarded than other children from all nervous strain and excitement, all harrowing and frightening scenes and stories. They are sometimes, though not always, timid and retiring by nature, do not join with the same zest as other children in common play, and may in later school years seem apathetic and self-conscious. This is not laziness, but the hesitation of an excessive sensibility. We must not think to rouse them by ridicule or by any kind of harshness. They need our encouragement to care little of what people think, and, above all, our appreciation of what they *can* do, to lead them through healthy activity of body and mind to self-confidence.

In early childhood a growing knowledge of the child's temperament must underlie our training. He came into the world endowed by nature with certain characteristics more prominent than others—“heir to a large and varied estate”—and upon our recognition of these, as well as upon our knowledge of the normal development of a child's mind, must largely depend our success in early training and character-formation.

Truthfulness.—It is advisable, when we are shocked at what we take to be a child's first lie, to remember Professor Sully's¹ definition of a lie as “an assertion made with full consciousness of its untruth, and in order to mislead”; and also to remember that as Dr. W. B. Drummond² says, “a child is not truthful until truthful-

¹ “Studies of Childhood.”

² “The Child.”

ness has become its second nature." We are apt to take too seriously, and to be unduly shocked by, a young child's lies. Much that would seem to be untruthful speech is merely romancing, partly for the benefit of the listener—based on the "dramatic impulse" which is so strong in childhood—and partly due to the childish love of mystery and of having and keeping tiny "secrets." The child is still in his "native cloudland" too, he is "unconcerned with realities," and his impressions are so many and so new, and his resultant ideas so numerous, that he remembers events very imperfectly and cannot reproduce them accurately. Only gradually as reason develops can we teach him that truthfulness and open-heartedness are virtues, by taking advantage of the opportunity offered by any little self-interested fib, which is often due to fear of scolding; by showing him that he may give his little confidences and confessions in absolute security and without fear of punishment; by encouraging an exact reproduction of the facts of his experience as he relates them; and by never deceiving him. Real falsehood with intent to deceive is rare in fortunate well-ordained childhood, which hears no lying or exaggeration at home, and which has no contact with the ready dissimulation of a low class of servant. Loose statements and even accepted social conventionalities assume an altogether different aspect when we have young children about us. If we are to cultivate a natural habit of truthfulness and sincerity in the child we must remember here, as in all our efforts of training, the powerful influence of suggestibility. We must remember, too, that to be too constantly finding fault with a child and thwarting his desires, as some mothers in their anxiety to train the child well, do, will tend to make him carry out his wishes in secret, and hide what he does—that is, will make him deceitful long before he knows the meaning of the word. Liberty—not licence—is essential to happiness and very essential to a child. He is, as Froebel ever reminds us, essentially a growing plant, and while training and pruning and removal of harmful pests may all be necessary, we must let him grow in an abundance of sweet vitalising air and bright sunshine, and the child who is free and innocently happy, and who fears no (to him) severe punishment, will have little to conceal.

Purity.—It is truly said that "in general the little child is naturally pure . . . and knows neither shame nor shameless-

ness,"¹ but there are instances which come under the notice of mothers and physicians when, less often as the result of perversion of nature than as the result of the contaminating example and teaching of low servants or little child companions, it develops tricks of self-abuse. While cure is possible, prevention is better; and the child's danger in being left entirely to the care of low-class English servants, and especially coloured servants, or ever allowed to be taken by them out of the mother's sight, cannot be too strongly emphasised. Little personal delicacies and refinements in undressing and attending to the requirements of nature can scarcely be taught too young, and the common outrage of a child's natural modesty by that cruder form of corporal punishment which "injures that instinctive feeling of the sanctity of the body which, even in the case of a small child, may be so passionately profound," deserves careful consideration at the hands of parents.

Any tendency to handling of the parts in a little boy or girl should be an indication for the closest watchfulness. If it is found that this is a constant occurrence or that the child practises rubbing of the parts either with its hands or against some object, a doctor should be consulted, since the stimulus which leads to the act is sometimes due to irritation, such as the presence of thread-worms or of a slight discharge in a girl, or a long tight foreskin in a boy.

If no physical cause is found to underlie the practice, an attempt should be made, in the interest of other little ones, by the close observation of all those who have dealings with the child, to trace its origin, though sometimes it starts *de novo*.

The home treatment will consist of constant watchfulness, which will prevent, if possible, the act ever being repeated again. The child must never be left alone in his bath or at any time when undressed, or when attending to his bowels or bladder. He should be watched until he is asleep when put to bed for his midday sleep and at night, and should be taken up and dressed as soon as he wakes.

He must sleep in combinations which fasten at the back, and wear a thick napkin securely pinned beneath them, and it is also advisable to encase his hands in thick woollen gloves tied on at the wrists with tapes. This treatment should be adopted in its entirety until the eighth year. From the fourth year the immorality of the practice should be discussed with the child, and an

¹ Compayré, "Later Infancy of the Child."

appeal made to his sense of shame. Before that age it is useless, as the child is better allowed to forget the practice by being prevented from ever once again indulging in it. Punishment should never be adopted.

The discovery of the practice will grieve and come with a shock to the parents, for we feel, with Edmond About, that the innocence of childhood is "like the newly-fallen, unsullied snow of the Jungfrau which nothing has touched, not even a bird's foot ;" but it has no moral significance in a tiny child, and, rightly handled, the prospects of its complete cure are good.

First Religious Teaching.—The first cultivation of a religious sense in a child should be, I think, the appeal, which should run like a silver thread through all his early training, to his love and sympathy with "man and beast and flower," and the inculcation, which we cannot begin too early, of a sense of revolt against "all that severs the bond of love that Nature makes ;" for out of the child's practical knowledge of love we may best develop his conception of God, its source. We should teach him nothing of God's severity and little of His judgment, His aloofness and greatness, for it seems a frustration of our ends to teach him to fear God only as a judge and silent watcher of his baby misdeeds, or, as He too often appears to him, as a dim and awful figurehead looming out of the unknown, that country ever peopled with strange and terrifying forms in a little child's imagination. Rather should he lip his first prayer to some one who loves him, who loves his little sister, and Nana and pussy ; who will help him to be good, and will be always with him to take care of him when alone, frightened, or in the dark ; some one in whom he may learn to feel sufficient confidence to pray—as the tiny boy told of by Professor Sully did, when told he could say what he liked to God,—“ Love me when I'm naughty.”

We should tell him nothing of Eternity, for he often evolves bewildering notions, which are as grotesque as they are misleading, as the result of such suggestion ; and all allusions to the supernatural in motives for conduct or other religious discussions should, I think, as far as possible be excluded, for the ideals we put before the child must necessarily be ethical rather than religious. The soil must be prepared by the laying of suitable impressions ; impressions themselves laid by the fostering of that spirit referred to above

We should, in short, rely less in our first religious training on *teaching*, if by that we understand imparting knowledge, than on *suggestion*—seeking to “illuminate the imagination of the child with ideals of love and gratitude and service.” Then only as his reason matures can we hope to teach him on the foundation of these impressions, through suitable stories of the history and personality of Jesus (such as some of those from the “Peep of Day”) “what God is and what man ought to be.” Little if any church attendance should, I think, find a place in his early years, and no narrow or formal theological teaching. The essentials of religion are all that we can safely and advantageously give a child, and these we are likely to sacrifice in the future if we overload his undeveloped mind with ideas beyond his comprehension and far remote from his experience. He must first know himself, and “he must know all things before he can completely know himself,” or as Miss Wiggin puts it, “the thoughts and feelings must come before the expression.”

The child's heart is an unfinished, untouched harp. The frame is there, but for us it is to fashion the chords, out of those influences which appeal to the best in his nature. To string them in and bind them fast; to adjust the tones till each chord rings true and sweet; then to leave for the touch of the master hand—the melody.

Death and all its concomitants we cannot too carefully shield the child from. The sight of dead animals is often inevitable, but the taking of children to funerals or to view the dead cannot be too strongly condemned. The impressions so gained on the susceptible nervous system of childhood have in many cases remained, with a morbid and haunting fear of death, throughout a young lifetime. The coffin and the grave must be words unknown in the little child's vocabulary, and death must mean but absence. It is impossible for him to understand that “the fading flower carries in its heart the seed whence new flowers shall be born,” since he knows nothing of the seed; and mercifully he soon forgets.

The end of all religious education is the same—the implanting of the seeds of a reverence for the good, and a trust in the good, in the heart of the child. Its methods will vary in individual cases, but perhaps every mother will have found out the secret if she makes the child feel that “his mother's love is a part of the Divine love which fills the Universe.”

CHAPTER XIII

EARLY EDUCATION

"The world is so full of a number of things
I am sure we should all be as happy as kings."¹
—R. L. STEVENSON

"The eternal dawn beyond a doubt
Shall break on hill and plain,
And put all stars and candles out
Ere we be young again."²
—R. L. STEVENSON.

LIFE is in itself all an education to a little child. He is so active and so very much alive that his investigating eyes leave little unsought out in the world around him, and the eye and the hand are so closely associated that it is natural for him to handle all he sees. Everything he touches, everything he sees is something new and interesting, which has the "pleasure of surprise," and from each impressions reach him from which come ideas. His imitative powers and experimental tendencies are so strong, and his imagination so vivid too, that it is natural for him to find out things for himself and to imitate and represent the experience of others. Hence he learns by muscular activity, by experiment, imitation, and imagination to understand the life which surrounds him; and to his own untiring energies, which, while they delight him, lead him ever on to increase his stock of experience, he owes chiefly his growth, and proves that fundamental law in both physiology and psychology that *growth is dependent on use*.

We have nevertheless an important part to play in the first education of the child, one which we shall know how to fill, I think, when we understand the *Meaning of the word Education*; the *child's Instincts*; his *Needs*; his *Means of Development*; the

¹ "A Child's Garden of Verses": Happy Thought.

² Ibid., "To Minnie."

Influences which should be brought to bear on him, and the Meaning and Possibilities of Play. Perhaps the first great essential is the intuition or cultivation of the power to *feel and think as a child*. Herein lies undoubtedly the first secret of success in story-telling as in the first teaching suggested in Chapters XIV. and XV. To some this power is more natural than to others, but perhaps for most of us the first attempts to join in the spirit of a child's play, with its complete forgetfulness of self and whole-hearted capacity for enjoyment, its vivid fancy and power of make-believe; to measure the exact limits of its comprehension of the facts we relate to it and the phrases and words we use, and to feel sufficiently with it to know what will appeal to and hold its interest, is calculated to make us feel our limitations. It is, for some especially, less trouble to turn the child over to the care of a trustworthy nurse and to send him as soon as he is old enough to a kindergarten, than to cultivate this faculty and devote serious attention to his first education, but the child's loss in such case, especially from the fourth to the seventh year, is, I think, incalculable.

The derivational *Meaning of the word Education* is to "draw out," to "lead forth," and this, which is the keynote to the philosophy of Froebel, is very especially the one which should belong to the first education of childhood, if not, indeed, to the whole education of children. Our aim, if we follow the teaching of Froebel, will be "not to instruct but to draw out and develop all the child's powers"; his "wonder power," his "observing power," his imagination, above all, his interest—to "create in him a thirst for knowledge," rather than to give him the knowledge of others and to store his memory with mere facts culled from this.

Froebel would ensure the child's good mental and moral growth by giving him more abundant life, by supplying him with an environment which not only excludes unfavourable influences, but gives him scope for learning through *his own activities* that the world on which his eyes are opening is in its intention *beautiful and happy*. That it is *akin to him*, and that there is a *sphere of usefulness* and good for himself like every creature in it, and a good intention in every natural law; and that happiness is the result of *industry and mutual help*. Hence he conceives a "children's garden," in which not one child but children together—"the noblest of growing things, shall be cultivated in accordance with

the laws of their own being, of God, and of Nature,"¹ and learn all these things through the medium of play. Every nursery may be and should be a Kindergarten, since it must be the best training school for life, and every mother possessing the necessary culture and grasp of Froebel's intentions and ideal, must—with her intimate understanding of her child—be the best Kindergartner, since personal influence and inspiration are the first great essentials of the Kindergarten system.

The child's first *Instinct* is to be happy, abundantly and joyously happy, and so strong is this instinct that, if he only has health, he will attain a fair measure of happiness even though he came into life unwished for and unwelcomed and into the worst of circumstances, though less than if he comes into his kingdom to find all his "rights" ready to his feet. No "mist of insufficiency" surrounds him now, and "we could never have loved this earth so well if we had no childhood in it." His is the golden age of life, and those who have come under the "spell of the baby," or who are "still in love with love," know well that there is no greater source of delight than to add to the sum of child happiness in the world, to "give to the morn of life its natural blessedness," and all know it at Christmas time, if at no other, in home and hospital and slum. One of the most touching sights of modern London life is the sight one often sees when Christmas shopping, of the worn mother of the working classes with her tired smile of disillusion leading her child through the mazes of the "Christmas bazaar" of our great shops, to "view" the toys. He never touches, he knows he may not have, he only looks; but his little face and merry prattle are instinct with joy and wonderment.

The child's *Needs* are a rich and blooming health and vigour that he may enjoy his life and profit by all it holds for him in these wonderful and important opening years; and a mother who is a true "educator of a human being whom she has to bring into harmony with God and Nature and Man,"² and who gives him all his "rights."

The child's *Means of Development* are his senses of touch, sight, smell, and hearing, and his natural activity, and we must give him, guided by Froebel, abundant though ever-watchful scope for his exercise of these, both indoors and very especially out of doors,

¹ Froebel's Letters (Michaelis and Moore).

² Eleonore Heerwart,

in order to strengthen his growing powers of observation and self-expression, through which he learns to know the world about him and himself. His own spirit of inquiry, his curiosity, too, is a useful aid to his education, and we must satisfy this, wherever possible, by giving him a name with its correct pronunciation and a meaning and reason for what occupies his fleeting interest; by encouraging and not "quashing" his childish prattle. For though during the second year much of it may be for the sake of "showing his little powers of oratory, just as the birds sing and chirp,"¹ or the mere repeating of what he hears, he often really asks for information even now, and soon seeks explanations at every turn.

The *Influences* which should be brought to bear on him are *an even love*, which teaches him a daily and hourly lesson in its strength and power of inspiration; an *unvarying law and sense of order* governing all his life, in which he finds a curious comfort and satisfaction as he learns to adapt himself to it and to trace its operations all through nature. *A sense of beauty* in his home and nursery and out-door life which leads him to a keen appreciation of form and colour, fragrance and sound. A child always naturally prefers a coloured picture, and musical sounds which are soothing, such as have been invented to put him to sleep from time immemorial, or gay and enlivening, which quicken his own instinctive activity and sense of merriment. *A social sense* of interdependence between his own life and that of others, fostered in his nursery, and especially in his play, which he felt long before he could realise it in his more perfect rest in his mother's arms and his dislike of waking to find himself alone by day or night, and shows in his delight and interest in all living things; and a sense of co-operation and common interest, which teaches him to feel a pleasure in sharing and enjoying with others, and in serving them and receiving their help.

The Meaning and Possibilities of Play we might say much of. The spirit of Froebel's teaching, "who saw as never man saw before into the heart of the child," was that play was, above all others, his most perfect means of development, and some one else has said, "A little child at play is at his lessons. His lesson-book is the world. His task just to learn all about everything." Play means more than appears on the surface to the unknowing eye.

There is again running through it from the child's infancy the continuous thread of evolution. He plays first of all and before he can walk, with his muscles, as the young of all animals play—kittens and puppies and lambs, and when he has learnt to walk and talk we can see him not only living over again the history of the race in his play, but realising in it the first beginnings of the future pursuits of his adult life, of its work and its recreation; and preparing for them now through his spontaneous and imaginative play.

We see the "constructive instinct," the delight of making something, in the child's sand-castles on the sea-shore, in his mud-pies and grubbing in the garden, his drawing and painting, his cutting out; later when with a piece of string he makes a whip, works with his penknife, fashions a catapult, busies himself with his tools, his "chisel, both handle and blade, which a man who was really a carpenter made."¹ The first instinct of skill and dexterity in his bubble-blowing, marbles and ninepins (the child's billiards), top-spinning, kite-flying, &c. The "social instinct" in the doll's dressing, doll's house, "shop," &c. The instinct of pure muscular action which we saw in the baby as he stretched and kicked and later raised himself from a lying into a sitting position, in his playful leaps in his mother's arms, and his kicks and sprawls and rolls, with happy crowing and complete enjoyment of his liberty, on his nursery carpet. Later, in his native incessant activity, which makes it so difficult for him to sit still for any length of time; leap-frog, dancing, skipping, hoop-trundling, bat and ball, tree-climbing, and all the nursery games.

As to the *Possibilities of Play*, these are almost unlimited for the child, for all play, which covers all muscular exercise, toys, books, games and stories, has a great and real educational value. That child is the most truly joyous whose "natural activities are directed into the right channels"; whose play is regulated for him according to his age, and with due regard to the necessity for bringing into play and developing both his physical and mental powers; as an educational factor, in short, rather than solely as an amusement to keep him out of mischief.

There are two important points to note in arranging a child's play. First, that we should lead him, if we would truly interest

¹ R. L. Stevenson: "A Child's Garden of Verses": My Treasures.

and benefit him, as far as possible to think and do and construct for himself. He is essentially active, not passive, always most interested in what things *do* and in *doing* things himself, and he has, given only the suggestion, a wonderful gift of "make believe" and of turning the most ordinary material of a work-a-day world into that of a world of romance.

Hence the principle of building his house of bricks for him is wrong, and we must, besides choosing toys for him which will give him something to do and keep him busy, encourage him to initiate his own games, and often to make his playthings—give him "some pegs on which to hang his glowing fancies." He will always ride his own stick and drive his arm-chair; or sofa, navigate his table turned upside down, and be his own train, and will delight to make his own whip and fishing-rod, and later his furniture for the doll's house, and the little girl her own doll's clothes.

We must also remember that solitary play is not only robbed of half its enjoyment to the child, but also of a large part of its educational value. Froebel's teaching, which we may so safely follow, was always of *play with others*, mutual play, and this we should ensure the child.

Play at different ages.

During the first few months of life the less we play with the baby the better. He has so lately exchanged the quiet dark seclusion of his first home for a noisy, clamorous world, full of new and stirring sensations of sight and sound, that his nervous system is a very unstable organisation. Hence he requires much sleep and quiet during the time that he is adapting himself to his new environment, and he finds his own quiet pleasure in kicking, stretching, crowing, and smiling.

At six months he will pick up ideas of sound and form and colour from the dancing of his bright-coloured ball; his bright jingling rattle with its coral and silver bells, and his gay woolly rattle; he will play and splash in his bath, and delight to frolic and tumble in his softly padded "basket," or on his bright "nursery carpet."

At a year old the child's characteristic sense of merriment and humour, which we first discerned in his flickering infant smile, is sufficiently developed to appreciate a funny jumping clown and gay, whirling musical doll, and the immemorial games of Peep-Bo, Ride-

a-cock-Horse and Pat-a-cake; and the "falling game" and the "tossing game," the dandling and dancing that he loves, when

"Baby well may laugh at harm
While underneath is mother's arm."

He is full of rogueries and jokes, some of which we may only guess at the meaning of. His play now is chiefly the first active exercise of the senses of tasting, touching, listening, and gazing; the "first movements of the legs and arms, the first exercise of the voice." The child is very actively preparing now for walking and talking. Each muscle has to be exercised and taught before the child can use a limb as he will use it later, and the brain is developed largely through the muscles at this period. He also plays largely with his hands, and in so doing slowly acquires the more perfect use and control of them, for from the general and clumsy use of all his muscles he finds his way to the more delicate use of special muscles. Hence he loves to put into practice at every available moment his new-found accomplishments in the direction of seizing things and throwing them down, rattling them, hammering and drumming with them, tearing what he can to pieces, and, above all, tasting, sucking, and swallowing things, which last must be anticipated in the choice of his playthings. Those which are unpainted and capable of being washed should be selected; and hairy animals with loose, easily detachable fur, toys with loose parts or jagged edges, or small objects which can be swallowed or pushed into the nose or ear, should be avoided.

Walking.—Whereas the child practised the use of his muscles by kicking and stretching and raising himself into a sitting position, leaping and sprawling, in his infancy, he now crawls "turtle-like" and rolls; later pulls himself up, stiffens his muscles, and acquires his balance in the first half of his second year usually, in preparation for his great feat of walking. The time of his first step will vary to some extent with his temperament—whether he is quick or slow, and with the state of his health—after a long illness, or if he is rickety he will often walk late; and he will generally walk and talk earlier where there are other children in the nursery, when suggestion and imitation play a large part. The baby's attempt to raise itself on to its feet needs no suppression, and his first trips may be aided, but he must not be "taught to walk," especially

if he is heavy, for to hurry him is to court bow-legs and other deformities.

Talking.—The child's speech is, like everything else, a slow evolution, from his first inarticulate though expressive baby sounds to his later baby babbling, so largely explained by *gesture*, which we see the savage races so largely resort to to-day, and in which we trace both their and the child's relation with the far-off past; on to the imitation of sounds and words he hears, gradually strung into short sentences; through the "patois of childhood," which is sufficiently comprehensible to his friends, till he reaches a more or less complete little vocabulary in his third year. If he has made no attempt to talk distinctly by the end of the second year, advice may well be sought, since he may be suffering from "adenoids," or deafness, or, more rarely, may be mentally deficient.

At two years we shall select and dedicate to his own special use that centre of delight a toy-box or cupboard—to be haunted by the "Unseen Playmate"¹ of Stevenson's immortal child—

"Nobody heard him and nobody saw,
His is a picture you never could draw.
But he's sure to be present, abroad or at home,
When children are happy and playing alone."

The world of pictures bright in colour and simple and bold in outline now attracts him. We shall set to work with a pile of old books, scissors and paste, or, better, "photo mounter," and paint-box and brushes, to make him a great linen scrap-book, in the first pages of which newly-found friends will greet him in the shape of the animals and toys and the domestic objects of his daily use. Carved wooden animals, unpainted, he will learn to recognise and name. This is the age for the sand pile, for digging and grubbing with a small spade and bucket, and loading the miniature wheelbarrow; of Noah's ark, woolly lamb, teddy bear and rag dolly, of hobby-horse and safety rocking-horse; of trumpet and horn and drum, and the short walks and runs out of doors which deepen his childish bloom and keep his sleep "dewy and fresh."

At three years we shall continue to enrich the scrap-book with more detailed scenes of ordinary and humorous phases of child and animal life. Christmas, with Santa Claus and all its accompaniments

¹ "A Child's Garden of Verses."

of stocking and pudding and tree, will occupy a prominent and captivating place.

Scrap-book Making.—There is a great art in successful scrap-book making, one that is well worth while cultivating for its value and joy to the child, and not wanting in its own fascination.

Colour and action must be the striking characteristics of each page. After colouring them, if not coloured, little houses, and tree and flower pictures; toys, domestic and other objects, and a number of figures of children, adults, and animals should be cut out from old books and cards and pasted into the scrap-book in groups, so as to form little scenes that are full of action, humorous and interesting to, and within the comprehension of the child. Coloured advertisements, and sheets of scrap-book pictures which the toy-shops sell, forin useful adjuvants, and gold paint and stars and spangles cut from the old-fashioned sheets of gold and silver paper, like "Jack Frost powder," which adheres to a picture with a thin gum coating, will lend mystery and brightness to the scenes of Christmas and Fairyland.

Toy engines, trucks, and motors and sailing-boats will claim the boy's interest; and the girl's, the dolly, "that child of the child," its house and furniture, its tea-sets, kitchen sets, wardrobe and little parasol, cradle and pram. The clay-pipe or straws and bowl of suds for bubbles, the box of bright beads for stringing, the spinning-top, and the magnet fishing-game; and out of doors the gay balloons and fluttering windmills, and flags and kites to fly, the reins for "playing horses," the skipping-rope and hoop.

At four years the field is considerably wider; storyland is now really open to the child, and, if the mother has acquired the art of telling stories, her resources, like the child's opportunities, are doubled.

Stories.—The child's first stories will be exceedingly simple and chiefly reproductions of his own experience; he will like to hear about a dog, a bird, a kitten, a farmyard, anything that he knows about, and a good deal of gesture, which he uses himself so freely, will add to their charm for him. And then the mother will gradually, always keeping the child's own life and vocabulary well in view, stimulate his imagination by the old nursery and fairy tales, the Bible stories, and, by seeking to awaken his interest in the plants and animals, and in the children of other lands and times, give him,

as his knowledge and comprehension grows, his first little lessons in Geography and History and Nature Study. Stories may also have an ethical value, for they may tell him of deeds of patriotism and heroism, awakening instincts of generosity and unselfishness in his little heart, and thus suggesting ideals, and they may sometimes subtly act as "moral antidotes to his pet failings." It is important to keep all blood-curdling scenes and harrowing details carefully out of a child's stories, and they should never be too thrilling at any time. Not only fires and exciting big-game incidents and "early deaths," but, in Bible stories, the Crucifixion and early Christian sufferings should be strictly excluded, for every child does not show the attitude of mind expressed by the little boy, who, looking at the picture of the early Christians in the arena, exclaimed, "Oh, look at that poor lion ; he hasn't got a Christian !"

The many beautiful modern children's books will afford him long hours of delight. Cheap paints, and painting-books which have not the fault of too much detail and complexity ; pencil and paper for drawing ; blunt-pointed scissors and paper for cutting out ; and "plasticine" for modelling will afford him scope for the training of both eye and hand.

Clay Modelling.—Clay modelling is especially useful to the young child, because by it he can represent more than he can in drawing, in that he can show depth and substance as well as the mere outline of length and breadth to which drawing confines him.

Children in their love for clay modelling reflect the distant past, for Prometheus, the god of Greek mythology, was said to form men in the image of the gods out of clay from the rivers ; and many of the South African native tribes of to-day are in the habit of digging clay from the river banks and springs and forming tiny clay oxen, wagons, and men for the delectation of their little piccaninnies. A sense not dissimilar from that of kudos won, of the modern manufacturer of the most delicate Worcester china, would seem to be known to the child when he has modelled his tiny cup and saucer for the doll's house, and perhaps something of the sense of power of Omar Khayyam's Potter even finds its reincarnation in him as he rolls up his sleeves and begins work with his little mass of clay or plasticine.

It is well to teach him as he learns to handle the clay to roll a bit of clay into a ball, and an oval in the palm of his hand, to make

a cube like a lump of loaf-sugar ; to sink a marble into the clay and form a hollow ; to divide the clay where necessary with a length of fine twine, and from these first principles to model the objects he chooses. The child will model by degrees an apple and a pear with a tiny twig for stalk, an orange, a potato, an egg, a cottage loaf, a walnut, a mushroom, shells, simple flowers, a cup and saucer, and the necessary ware for the doll's house, beads which he may string into a necklace, a nest of eggs, a horseshoe, a hammer, a candle, a boat and a hat, and many other objects.

The joy of playing with water is too real to be discarded, and with sleeves tucked up and frock protected (it is well to remember in children's play that the clothes are, or should be, made for the children and not the children to show off the clothes, and that they "have a divine right to be gloriously dirty"), the child will revel in floating his ducks and boats, and bathing the celluloid or india-rubber dolly.

The social instinct develops considerably at this age, for the girl with the dolly "who dreams of the name of mother as she rocks the baby doll," the doll's house and wardrobe, and the cooking stove ; for the boy, with his bricks to build, his soldiers to marshal, his little tools for gardening and carpentering, his miniature football, and little cricket set ; and for both the enthralling game of "shop" with kitchen or letter scales and weights must not be forgotten. Cardboard coins can be got in boxes from those shops which supply kindergarten necessaries (such as Geo. Philip & Son, Kindergarten Depot, Fleet Street, London, and O. Newman & Co., Regent Street, W.). Some people have condemned soldiers as playthings for children, but they need not mean to him the triumph of killing so much as the triumph of tactics and defence of his country, if we foster the right spirit in his play.

At this age we may begin the useful "letter games," with a box of large cardboard letters, which can be procured from the toyshop at a trifling cost, and with these, which interest him immensely, the child learns to recognise the letters of the alphabet, and then to combine them to make simple words and to make his own name.

The Sand Pile.—The nursery box of sand, referred to in Chapter III., with a large piece of American oil-cloth, a spade and pail, plenty of building blocks—which can be sawn in a variety of sizes and shapes from pieces of board by a carpenter, amateur or

professional—scissors and paper for cutting out objects, and some leafy twigs and flowers, will offer unlimited possibilities and afford him hours of genuine delight. If the sand is spread out on the oilcloth, or in a large tin tray on his low table, and moistened with water, the child will fashion sand-castles with towers, walls, and moats, decorated with flags, fortified and garrisoned with his soldiers. He will excavate a mountain tunnel and drive his engine through it; a coal mine, timber it with his bricks, bank it with coals and suspend a “skip” and “cage,” and furnish it with his trucks. He will make a farmyard in which he will build tiny sheds, stables, and houses with his bricks, and arrange his Noah’s ark animals; a field strewn with grass and surrounded by a hedge of twigs where he grazes his cows and horses; a garden in which he lays out lawns and beds and paths, plants seeds and sticks in flowers, &c; a pond or a rocky pool in which is placed a dish of water, in which he floats his boats and celluloid frogs and fishes, or buries his shells and seaweeds. He will build a harbour, where he lands his fish, caught further out at sea; and docks, where he anchors his boats, and coals and provisions his ships. He will plant a forest of leafy twigs on the banks of a river; hew down the “trees,” strip the branches, and float the logs down the stream. With a small pail and patty tins, he will make pies and cakes, which, like the flowers and vegetables he has grown in his garden, he sells in his shop, or wanders round, as Simple Simon’s pieman, selling them on a tray. He will draw many designs in the sand, and trace his letters—“first his round O and crooked S, and then with a stroke and a crooked back to it, his D”—and figures, and learn to make his own name. The sand pile, like clay modelling and drawing, gives the child valuable scope for his creative instinct and helps to develop his self-expression. It quickens his interest in the things he sees and learns about, and feeds his imagination; and “imagination is to the child what wings are to the bird.”

He will colour and cut out his own pictures now, will paint and cut out different flags and mount them with gum on old matches or sticks, and will wish to make his own scrap-book. He will help to make rag dolls and stuffed animals if these are cut out for him; and we may paste pictures on cardboard and cut these into pieces for him to put together. He will make all sorts of furniture for the doll’s house with old corks and pins; or with dried whole

yellow peas, softened for some hours in water, and pins or pointed matches ; or with old matches and match-boxes and gum—covering the pins and matches with tightly wound wool, and decorating and upholstering with his paint-box, crinkled paper, “gold” and “silver” paper and beads.

Acting.—This is essentially the age of acting and “dressing up,” of “make believe” and improvised play, in order “to see what it feels like to be” a tiger, a queen, and a motor car. We have all found how a dramatic story or a picture, or a Punch and Judy show, or a visit to the pantomime, calls forth the desire and cry “Let’s play it !” and we can appreciate the desire of the tiny boy, reported by Mrs. Meynell, who, while sensible of the dignity to be observed, entreated his mother to come down from her heights and “be a lady frog,”¹ though we may not be able to appreciate the excessive realism of the little boy who was seen to crouch for half-an-hour over an egg in his ambition to be a mother hen.

The child has his levées, social receptions, and coronations, his schools, weddings, and baptisms, menageries and circus shows, and revels in his *Charades*, suggested and led by the grown-ups. He will enter with the greatest delight and the most perfect art and self-abandon into the spirit of the action songs so strongly advised by Froebel (see later), as he takes the part of the butterfly, the snow-flake, the swallow, the lamb, the mower, the baker, the gardener, the postman, &c. ; and very soon he will live in a world of romance with his enchanted palaces, his Aladdin’s caves, his Fridays and Crusoes, and other heroes of thrilling adventure and far-away travel.

The old nursery fairy-tales—Grimm’s and Hans Andersen’s—and those Arabian Nights tales adapted for children, he will never tire of hearing. We have now a collection of African traditional stories, collected from native sources, in the “Fairy Tales from South Africa,” by Mrs. Bourhill and Mrs. Drakes (Macmillan and Co.) ; and the “Indian Fairy Tales,” by Jacobs (David Nutt and Co., London), will supply material for other fairy tales with local colouring which is new to the child.

Music and Singing.—Psychologists state that no child whose hearing is perfect is born without the sense of music, and without some correspondence of his own soul with that of music, his life will

¹ Alice Meynell, “The Children.”

not be complete. This is the age especially at which we may seek to train his ear and develop his love of music. We may teach him to open his ears to Nature's music—to listen to the wind:—

“I felt you push, I heard you call;
I could not see yourself at all,”¹

and its many sounds, as Tennyson was noticed to do so frequently as a child.

Teach the English child to listen to the singing of the birds and to distinguish their notes—Jenny Lind is said to have begun her training by imitating the songs of birds. To know the sound of moving water—“The sweetest sound in Nature,”—the drowsy rippling of the little burns and wavelets, and the dull undertone or the booming thunder, crash and hiss of the stormy sea. There are many charming little songs published in various collections (see below) which can be chosen for the children to sing; sometimes nursery rhymes set to music and sometimes little original collections of verses and tunes. They should be pretty, simple little melodies which are easy to sing; and difficult time, change of key, and frequent accidentals should be absent. Accompaniments should be played softly, and when the child knows, as it so soon does, the melody, leading notes will not be necessary. The wording should be simple yet poetical, and the child should understand the general and special meaning of it before he attempts to sing.

He should be encouraged to breathe deeply at suitable intervals, when his singing will form a good breathing exercise for him; and, remembering that a child's voice must not be strained, high and low notes should not be forced, and the first little songs should in general be chosen within the child's compass, probably from the D below the treble staff to the D an octave above.

Children gain confidence and find so much pleasure in singing together and illustrating what they sing by gestures or acting—“action songs”—that a few of these should always be included.

The following all contain suitable and charming little songs for children:—

“Tiny Songs for Tiny Singers,” “Dittyland,” “The Merry Songster's Song Book,” and Gaynor's “House that Jack Built” Collection (Weekes & Co., London).

¹ R. L. Stevenson, “A Child's Garden of Verses”: The Wind.

The "Little Lays for Lads and Lassies" (Agate & Co., London).

Mrs. Ormiston Chant's three collections of Action Songs (Curwen & Sons, London).

Elliot's "Nursery Rhymes" (Novello, London).

Westgate's "Century Songs" and Gaynor's "Original Songs and Games" of the Pestalozzi Series (O. Newman & Co., Regent Street, W.).

"Music for the Kindergarten" (Boosey & Co., London).

"Songs of the Child World" (John Church, London).

Leslie's "Songs for Little Folks" (Cramer & Co., London).

Gatty's "Little Songs for Little Voices."

The use of the gramophone with carefully selected records has been discussed in Chapter III.

At the age of seven it will be very advisable to allow the *musical* child to begin the study of the violin, since it acquires much more easily at this plastic age the essential agility of finger movement and the suppleness and power of stretching involved in this. Lessons and practice, however, must be short, and we must remember in the study of music, as of everything else, that the child's brain and nervous system are not yet sufficiently developed to give them serious exercise. Piano lessons also may well be begun at this age for boys and girls, since a knowledge of the pianoforte is very useful in later social life, in the rôle of accompanist, or in the training of little children; and, like a knowledge later of the theory of music, it is a necessary culture for the appreciation of the performances of others.

This is the age (the fourth year) at which the child delights in the childish games of Blindman's Buff and Hide and Seek and all the circle games, and within a year or so dancing classes should be begun for both boys and girls.

Much of the grace of the Grecian women of olden times has been attributed to their favourite games of ball, and some teachers of dancing have revived these again in their classes. The child beginning with one ball, then using two, gets wonderfully apt at throwing up and catching them continuously as she stands or kneels, and bends in different poises of the body.

This is essentially the time for the woods and fields, and the time for the beginning of Nature study. In many of the Colonies,

where the delights of seeking the harvests of the hedges and fields, where nutting and blackberrying expeditions are unknown, picnics in selected shady spots should form frequent and favourite outings. And indeed the more time the child spends in country surroundings, as opposed to town, the better.

Cycling.—This is a pleasurable exercise for the child, but not advisable until he is at least eight years old, and should then only be allowed with special precautions. The cycle should be light and its gear low, its saddle broad and barely peaked, if at all; and it should be so adjusted as to handle-bars and seat that the child does not stoop, and sits well forward on the machine. Strong winds ahead and very hot sun and hilly roads should negative the exercise, and “scorching” or very long rides should be discountenanced at all times.

He should be taught to place only the extreme forepart of his foot on the pedal, when the exercise is a useful preventive of flat foot,—a condition in which, owing to weakness of the sinews and muscles in the feet which often ache, the natural arch on the inner side is lost and the feet splay outwards. Skipping is much to be recommended for this condition, marching on tiptoe, and allowing the child to practise raising the body up and down on tiptoe; and the selection of hygienic footgear (see *Boots and Shoes*) is essential.

Stamp-Collecting.—At about eight years of age stamp-collecting is an instructive hobby for the child. The little Stamp Collector will travel far and widely on damp days and winter evenings over the globe, and pick up geographical names and positions. He will trace on the faces of his stamps the reigning monarchs of at least the last fifty years of the history of the world, and he will gain no little familiarity with international currency. He will import a stamp album, Stanley Gibbons by preference, and pester his friends and acquaintances at home and abroad for old stamps, and will exchange and barter, or, as he calls it, “swop,” duplicates with his fellow-collectors. He will learn to conduct his business methodically and acquire no small sense of value.

CHAPTER XIV

NATURE STUDY

“ And Nature, the old nurse, took
The child upon her knee,
Saying : ‘ Here is a story-book
Thy Father has written for thee.’ ”

—LONGFELLOW.

THE great advantage of a knowledge of science in the life of the individual is not, I think, sufficiently recognised. If it were, our children would all be taught the natural laws which govern not only our physical life but the whole of our environment—“the world in which man is placed and on which he so inevitably depends.” It would seem that such teaching should precede any other, and no child’s education or equipment for his life is complete without such knowledge. The study of Nature covers many distinct sciences, those of Chemistry, Physics, Botany, Zoology, Human Anatomy and Physiology, Geology, and others, each with again many subdivisions. These sciences, as such, have no place in the young child’s home education, and only in outline in the school child’s education, for their systematic study belongs to those men and women who choose to specialise in either, or all. But Nature study is the science of the child, and the essential elements of each should belong to all school curricula, and in science a little knowledge can never be a dangerous thing. Our educational authorities are beginning to realise these facts, but it is not as yet customary to give the teaching of science the place that it merits. The parents are the first educational authorities. Do they realise the importance of this teaching? That it means the more complete development of the whole child. That it is not as an end in itself that we must consider it, but as a means to an end, that end not only the enrichment of his inner and higher life, but the widening of his practical and economic horizon—the extension of

his sphere of usefulness in the world, and of the usefulness of the world to him.

By the study of Nature the child gains a greater sympathy with all living things, and proves the truth of the old Italian proverb, *tutto il mondo e paese*—all the world is one country.

By a closer observation of Nature he cultivates his sense of the beautiful in Nature and art, through which country life, and travel, the world of literature, poetry and prose, and the world of art have each a deeper meaning for him, and these all make for the fullest life; for as Froebel, the “gentle-hearted father of all happy children,” truly says, “the things of Nature form a more beautiful ladder between heaven and earth than that seen by Jacob.”

From his Nature study the child learns some of his first and best moral lessons in those ruling principles of unselfishness, self-sacrifice, co-operation, of industry and “forethought and preparation for the Future which shall be,” which he traces in the “beautiful web of phenomena that Nature has spun round him,” for he finds that everything lives for something else, and that everything is busy.

By a knowledge of the natural laws which govern the reproduction and continuance of plant and animal life, he acquires the first great facts of his sex-training in the most natural, the safest, and the most beautiful way.

On the knowledge of the elements of science gained at school, particularly of Biology, Chemistry, Anatomy and Physiology, rests the only true appreciation of the laws of the preservation of personal and public health—for “the laws of health must be understood before they can be fully conformed to”—with their special considerations of food values and nutrition, of fresh air, of special bodily functions, and of the value of temperance. For the girl, above all, these essentials must underlie the more practical domestic training, if she is to be an expert house manager and an enlightened mother.

We have said that Nature study is the science of the child; by this we mean chiefly the first observations of plant and animal life. There are many charming books, some of them beautifully illustrated, in circulation, which mothers may use to guide them in this branch of the education of the child, and a few of these are mentioned later in the chapter. It will well repay the mother to possess a little

knowledge of natural history and of elementary science, which she will best obtain not from "students' manuals" but from good and well-selected books which are really popular, and therefore interesting, on these subjects. The mother will know, or soon come to learn with practice, how to clear this of unnecessary detail, how to select the more essential and striking facts, and reduce these to the understanding of the child, avoiding all the names and terms of scientific language—for the child cannot set about his Nature study and learn to speak a new language at one and the same time, and it is the Nature study and not the language which is all important to him throughout his childhood. This need mean no sacrifice of scientific truth, which, I think, is very inadvisable, but only the power of thinking and feeling as he does, and the cultivation of the art of paraphrasing, which is a very useful one for mothers. The mother will find abundant material for real fairy stories in Nature, numerous facts for weaving ordinary stories, and an ideal field in which to *teach* a child, viz., to draw out his own observing and imagining powers and multiply his ideas, and to let him be the unconscious instrument of his own education. For the great world he comes to know about, of which he sees only a little bit, is full of active and progressive life, and he is always most interested in what things do. For this reason while books and pictures and stories will all impress his first Nature lessons on his memory and quicken his interest, Nature study can never be an indoor study entirely, nor can Nature knowledge be obtained second-hand, or the real secret of it is lost. It must belong to out of doors, and as far as possible the child must learn about what he sees.

There is an instinctive love of Nature, which we see at every turn, in every child, if indeed he is not a born naturalist, and he ever likes living things best as his playthings. The country child who spends his early years in the country, finding out in "God's great Out of Doors" "why flowers bloom and birdies sing," will be the most favoured, but the town child may spend many of his happiest and best-remembered and most valuable hours in country surroundings—in garden, field, copse, park, farmyard, or Zoo—which a short railway journey and a luncheon or tea-basket will very often compass—if his parents but realise the immeasurable ennui and wasted opportunity of an outdoor existence which consists of aimless daily walks, or hoop-runs along the pavement of

a street only less dull and boring to a childish mind than the people who pass up and down it.

It is only possible to indicate very briefly here some of the points to which we can direct the child's attention and in which we can seek to awaken his interest, and the ways in which we can do this, for the field is almost unlimited, and we may, if we have but the key—that is know, not only how to talk to him in his own language, but how to “wonder and admire” with him,—make science a veritable fairyland for him, and a series of wonderful and delightful discoveries.

We may tell him true fairy stories of the tiny architects in the sea—of the “shell palaces,” often so exquisitely patterned and tinted, built by the tiny chalk animals (invisible to his naked eye) and other sea creatures, with material taken out of the sea, and added to, chamber by chamber, as their inhabitants grew too large for them. Tell him of the beautiful coral trees and whole islands, fashioned by a tiny jelly animal down under the waves; and of the deftly woven, many-tunnelled sponge home of the jelly sponge animal clinging to the rocks. We may tell him stories of the many-roomed waxy palaces of the hive bees and their active and interesting life, and of the still more wonderful life of the ants in their galleried underground cities. We may tell him fascinating stories of the metamorphoses of insects—miracles still among us—of the beetles and flies of all kinds; and of the moths and butterflies who “change their bodies” while they go to sleep and “dream of the beautiful life to come.” It will fascinate the child to know that in a tiny dry brown sunflower seed lies sleeping a gorgeous golden sunflower, and that in a little acorn may lie a majestic spreading oak tree, who may reach a hundred feet and live for a hundred years. We may tell him of those little transformation scenes of Nature—the changing colours of the catfish among the rock crevices, and of the chameleon in his tree-branch home, and often let him see them for himself in the protective colours of the caterpillars and grasshoppers and of many spiders and other insects. It will greatly interest him to learn how the starfish grows a new arm when he loses one in battle, or how even a lost arm may grow into a new starfish, and how the crab changes his crusty armoured coat when he “grows out of it.” How the birds build their nests and the little mother bird warms her eggs, and the wee helpless babies

creep out of their egg-shell cradles, open their mouths and quiver their inefficient wings, and then learn how to feed themselves and fly. The child may learn to make acquaintance not only with the bigger animals, but with the life of the plants and all the active little creatures who share his world with him, and to hear *their* nursery tales—and rhymes if somebody would write them.

We can tell him, as times goes on, much of the wonderful work of those invisible fairies, the Sunbeams and their children the Heat and Light fairies ; of the Cold fairy ; the Glittering fairy (who makes Crystals). And we may tell him of the work of the Love fairy, and of that of the good Spirit, Life ; of Jack Frost and the Ice King (see Chapter XV.).¹

The child's animal friends will find no small place in his Nature training, and no child should be without such, and especially pets, to care for and learn to love. The first instinct of the tiny child towards the lower forms of animal life is usually as fearless as it is destructive, and the discovery of a hapless insect or a weakly fly is usually the signal to "dead it," much as he tears his picture-book to pieces in the newly discovered delight of being able to use his hands. Towards the higher forms he feels more or less antagonistic and works experimentally, with a sense of unusualness and a certain amount of fear—the friendliest doggie or the most inoffensive puss has his hair tugged and his tail pulled unmercifully, partly from curiosity to see what he will do. Closer acquaintance brings more confidence, and the suggestion that he gives pain or destroys a happy little life, a more humane attitude. But only when the child has pets, and is thereby in touch with their daily life and needs, does he feel quite in sympathy with them, and then they are his most cherished friends. His friendly and faithful doggie (preferably a smooth-haired terrier), who will join him in many a romp, and eagerly accompany him in all his walks, will be his first chum. He will delight to watch the kitten's frolics, see it take its morning bath and lap its milk ; and to supply a pet bird with food and drink and daily tub. To watch the fowls run for the tit-bits he scatters for them, and to search in the wake of the cackling hen for her warm

¹ I should like to acknowledge here my indebtedness to Miss Arabella Buckley for the idea of representing the invisible powers of Nature in the domain of Physical Science, as fairies—to children ; which I obtained many years ago from her "Fairyland of Science."

new-laid egg in the nest, and to stroke and listen to the peeping of the tiny fluffy chicks, and watch the anxious fussy care and furtive glances of the clucking mother-hen. He will spend golden hours in lifts on the pony or rides on the donkey, who puts back his long ears and puts down his soft nose for him to stroke, and takes the juicy morsels from his hand. He will delight to watch the munching and the milking of

“The friendly cow, all red and white,
I love with all my heart ;
She gives me cream with all her might
To eat with apple-tart.”¹

and later the child will find great pleasure in and learn much from feeding and caring for his own doves, rabbits, and guinea-pigs.

While we thus encourage his love of animals by giving him pets and, whenever possible, farmyard acquaintances, we shall also encourage his love of Nature by giving him the joy of seeking the wild flowers in their native haunts as far as possible, and by giving him a little garden to systematically care for. A small trowel and rake, and—best of all joys—a watering-can, with a little special plot of ground, or even a window-box or a greenhouse-box, and a few seeds to sow ; hence, a tiny plant to water, a bud to watch unfold, and a flower or vegetable of his own growing to pick. We shall thus awaken his interest in the seed, the young plant, the buds and the flower, and the part played by the soil, the sunbeams, and the raindrops, like the insects who come to visit the plant, and in the recognition and common names of flowers and vegetables.

We may tell him something of the soil to form which rocks crumble up and leaves decay and raindrops and streamlets and earth-worms labour ; the cold, damp clay which gives him his bowl and mug, and the bricks which built his house ; the dry sandy or gravelly soil, with the smooth pebbles and shining quartz ; the soft, crumbly chalk, once largely the minute shell houses of tiny sea creatures ; and the rich fertile mould, which the dead leaves and earth-worms have helped to make for the plants, with its luxuriant vegetable growth. We shall weave in tales of the ants (see Chapter XV.) with their slender waists and big heads (for ants are very clever),

¹ R. L. Stevenson, “A Child’s Garden of Verses” : The Cow.

with their ceaseless industry all in the dark, and marvellous perfection of instinct.

We shall tell him all about the bees (see Chapter XV.) as he watches one in its striped brown velvet coat, winging its way among the flowers, or coming in through the window to sip the jam and buzzing excitedly in its unfamiliar surroundings, or so weary and over-laden that it drops to sleep on a flower before cleaning its legs of pollen and starting off for home. Tell him about the honey they labour to give him, the building of the waxy comb, the nurseries, the active busy life of the hive, and swarming with the Queen to form a new colony. Show him a caterpillar, help him to search for the chrysalis, and point out its wondrous transformation into the brilliant butterfly—telling him how the butterfly, when she had sipped her fill of honey and was tired of sporting about among the flowers, laid her eggs on a leaf, where she knew they would be safe and the little ones would easily find food, because the Love fairy whispered to her; and how, warmed by the sun, like the flower seeds, the baby caterpillar was hatched, crawled about in the sunshine and ate till he grew very fat, and then spun himself a chrysalis cradle and went to sleep in it, to wake and emerge with grown-up wings. Point out the useful earth-worm (see Chapter XV.) as he pokes his unwary head out to sniff the air after the rain, too often to form a hasty, wriggling dinner for the watching, listening hungry thrush, or to be carried home in the beak of the mother blackbird and stuffed into the yawning mouths of her babies in the nest. Tell him all about the snail (see Chapter XV.) and the little green-fly on the leaves (see Chapter XV.). Tell him something about the much abused but clever and artistic spider, with her thick hairy coat and many legs and lightning speed, who spins her own silken bridge when she wishes to cross the stream or to pass from bush to bush, or to come spinning down to visit him, and her wonderful dew-spangled web, in which she swings in the breeze and ensnares the flies and mosquitoes. And how she by and by scrambles away and spins a silken cradle in an out-of-the-way crevice in the wall and lays her eggs in it, whence, after their winter nap, the baby spiders crawl forth. Tell him about the grasshopper, who jumps and kicks with his strong hind-legs, and, guiding his course among the grass and bushes with his long sensitive feelers, grazes on the grass and leaves with his strong jaws; secures unwary flies sometimes and

other insects with his powerful arms, and—as he has a little fiddle and bow on his wing-covers—fiddles his love-song in the twilight evenings. Tell him about the grasshopper's cousins in the sea, the prawn with his pretty bathing-suit, and the shrimps, who have tiny oars to swim with. The leaping cricket, with his sturdy legs, who burrows a tunnelled house in the ground or a tiny cave in the kitchen wall, who hides beneath the earth by day or in the wall, and comes out to dance and sing and nibble the roots in the dusk, or to haunt the warm fireside nooks and feast on the crumbs when all is quiet. Tell him about the fat greedy locust of warmer countries, with his brown coat and thorny legs, who flies over the sea and land and darkens the air with his swarms, and strips the fields and gardens; and find him a picture of the little African "Hottentot god" (*mantis religiosa*), with its slender, graceful figure and upraised, prayerful attitude, waiting in readiness, however, to pounce on its prey.

We shall teach him to know all about the many birds and their habits, like the little Hiawatha who

"Learned of every bird its language,
Learned their names and all their secrets.
How they built their nests in summer,
Where they hid themselves in winter."

Tell him about the building and often lining of the nest, the laying of the eggs, the little mother-bird who spreads her soft wings over them to keep them warm all day and all night, till the helpless babies creep out of their egg-shell cradles; how she fetches food for them and feeds them, and teaches them to fly as the little wings grow, and they get older and stronger. Tell him all about the worms and caterpillars, the berries and seeds and juicy fruit morsels; the songs, and flight to warmer parts for the cold weather after renewing their feathered suits. Tell him about the far-flying, softly-twittering swallow, with its long and pointed wings, its graceful flight from its nest in the eaves to join the flock in autumn, and return in the warmer weather: Hans Andersen's story of Thumbelina. The soaring lark, who builds his grassy nest in the meadows or corn-fields, and rises trilling his sweet joyous carol high up into the sky. The cheeky, friendly robin with his red waistcoat and bright little twinkling eyes, who cocks his little tail and hops on

the window-sill or in at the door in search of crumbs and scraps when the berries have gone, and the snow covers or the cold has frightened away his favourite worms. The little wren, with her perky little tail always cocked, who flits like a little mouse from bush to bush and over the ground, and builds her softly-lined nest with its little side-door low down, and who has such very wee babies: the story of Cock Robin and Jenny Wren. The lazy cuckoo, who foretells the summer, who wanders from nest to nest to lay her eggs, and whose ungrateful babies grow up to ruthlessly evict their rightful tenants. The hooting or screeching owl, with his strong, hooked beak, who sees in the dark and flies out at night to hunt his prey, eats mice and birds, and looks so wise. The grimy little, hopping, chirping town sparrow, with his nest-hole in the wall, his varied diet, his bath in the dust or muddy pool, fearlessness and squabbles. The timid thrush, the enemy of the snail whose shell he cracks against a stone, with his speckled waistcoat and sweet song; the plump and lively blackbird with her black dress and yellow bill and cheery song, and her pretty blue, speckled eggs, who loves the juicy cherries and other orchard fruits. The weaver-bird, with its wonderful hanging nests, which the children see in the warmer countries, in the trees at the water-side; and the little brown nightingale, who sings his beautiful love-song in the low bushes in the evening and on into the night in early summer.

We may teach the child during English rambles to recognise the different trees that give shade, home to the birds and insects, wood for his chair. To compare the shapes and appearances and seasonal changes of the oak, the elm, the chestnut, and the beech, with those of the evergreen pines and firs—the Christmas trees—and to know the holly, mistletoe, and ivy.

We shall teach him about the re-awakening of life in the spring, when the great and good Spirit—Life—stirs in the sleeping seeds under the earth and in the nestling leaflets slumbering in their cosy waterproof cradles on the bare tree branches, and wakes them up, and begins her beautiful work with the Sunbeam fairies of clothing the trees with tender baby-green, and carpeting the woods and fields, and sprinkling the hedges with flowers. We shall teach him to note the colouring of the “painted leaves” in autumn and their fall into a leafy carpet. Tell him how they are covered, in their turn sometimes, by the “white bed-clothes” of the winter snow

during the winter sleep of all things : tell him the story of the Babes in the Wood.

We shall let him see the beauty of the sunset, and tell him about the work of the sun—and his messengers the sunbeams, who paint the flowers and fruits and warm him, like the baby-seeds and caterpillars—when he vanishes and the children go to bed, after his journey across the sky. Let him peep at the moon, which has interested him since he first stretched out his baby arms in an attempt to reach it ; tell him of the tropical moon-lilies, who sleep in the day and unfold their white petals in the moonlight, to yield their honey to the moth : tell him Hans Andersen's "Story of What the Moon Saw." Let him watch the twinkling stars, "God's candles," and tell him the story of the Christmas Star and Baby.

We shall tell him about the work of the rain-drops when they come pelting down, and how the Heat fairy and the Cold fairy make them ; how the Heat fairy dries up the ground after the rain, and how she and the Cold fairy make the dew and clouds (see Chapter XV.). We shall point out the heavy dark clouds which come down near to the earth and mean rain, and the light fleecy clouds which do not. We shall not only let him see, but tell him about the rainbow—which is a band of raindrops coloured, as are all the flowers and autumn leaves, and butterflies and dragon-flies, by the Sunbeam fairy, who can change her white dress into many bright colours—violet, blue, green, yellow and red ; and who makes the rippling wavelets sparkle in the sunshine, and colours the waving fringes of the beautiful sea anemones in the rocky pools.

We shall find no small entertainment in the remarks the child makes as the result of his observations of Nature—such as the tiny girl's who, when she saw the dew, thought the "grass was crying," and that the butterflies were "flying pansies." We shall make a brave effort to keep up when we are questioned, like the mother of the little boy told of by Professor Sully, who breathlessly sprung upon her, "What does frogs eat, and mice and birds and butterflies? And what does they do? And what is their own names? And what is their houses' names? And what does they call their streets and places, eh?"¹ We shall be surprised too at the child's wonderful powers of observation when such are cultivated by giving him scope for them in the fields he naturally loves—such

¹ Sully, "Studies of Childhood."

as those shown by the small girl reported by Miss Wiggin,¹ who when asked, "What is a bat?" replied, "He's a nasty little mouse with injy-rubber wings and shoe-string tail and bites like a devil."

We shall encourage the child to make collections, according to his age, but without any sacrifice of life, and so foster the spirit of personal investigation or research—that spirit which made a Darwin, a Huxley, and an Edison; to gather and press and mount flowers and autumn leaves and sea-weeds, with the names and dates and places of finding them; to collect shells, pebbles, cones, acorns, and other specimens; and to keep and watch silk-worms and other caterpillars, gold-fish, tadpoles, newts, &c.

Caterpillars may be slipped gently into match-boxes² and taken home to be kept in boxes in which two sides are replaced by fine wire or mosquito-netting; fed in general with the plant they were found on, and furnished with damp moss or leaves, some soil and twigs and bits of bark. In this way the spinning of the cocoon and transformation of the chrysalis into the adult may be watched; or if a butterfly or moth so confined and cared for lays her eggs on a leaf, the whole process may be seen from the beginning. Frog spawn may be obtained in a net from stagnant ponds in early spring, and, if kept in pond water, changed two or three times weekly, the development of this into the tadpole and frog may be watched by the child. Failing a real "aquarium," a confectioner's glass "sweetie jar" will form a substitute, and the water may be syphoned out with a piece of india-rubber tubing, and weeds, gravel, &c., should always be included. A salt-water "aquarium" at the sea-side will often afford an opportunity of watching the various creatures which may be obtained in a net, either from the pools or left on the sand by the receding tide; or which the fishermen will sometimes know where to find.

Then, since Nature's is a "serial story," the mother will, as the child grows older, make her teaching about the plants and animals a little more advanced, with the help for her own guidance of such books as Paul Bert's "First Year of Scientific Knowledge"; Sandfield's First, Second and Third Year's "Courses of Work with

¹ "Children's Rights."

² The child should not handle the hairy caterpillars especially, since these are often irritating to the skin.

Mother Nature" (Pitman & Son, London); Arabella Buckley's "Life and her Children" (Macmillan & Co., London), and other books mentioned later (see *Books for Nature Study*).

Without any mastery of botanical names and without any pulling to pieces, destruction, and dissection, which is very inadvisable at this age, pre-eminently of observation and of the love and nurture of all living things, and which belongs only to later and more methodical study—we shall teach him now to study the more obvious parts of plants and the shapes of the leaves and flowers. We shall, avoiding dry-as-dust facts, teach him to think of the plants as *living* things, and to find out what they are like and what they do, explaining to him in the simplest of language the use of the stem, leaves, and root, and the way in which the plants drink and breathe. How they breathe through the tiny invisible mouths on the leaves, and drink the raindrops and food juices sucked up by the roots from the soil. How the stem lifts the leaves and flowers and buds up to the sunlight and carries on the food to them from below. We shall show him how some roots are useful for us to eat, such as the juicy carrots, and many leaves and buds, such as the cabbages and cauliflowers, which the snails and caterpillars also eat, who think, of course, that cabbages were made for them.

We shall tell him about the development of the flower and leaf-buds—opening a flower-bud and showing him the baby flower in its dainty green wrappings; and a tree leaf-bud in spring, showing him the baby leaflets swelling and bursting their cosy waterproof cradles. We shall teach him to recognise the different flowers, their colours and shapes, and something about their different parts (see Chapter XV.); and tell him about the time of the blooming of the flowers and their careful protection of their seed-babies.

We shall show him the structure of a seed by splitting open a pea or a soaked almond kernel, showing him how the mother plant has "wrapped her baby in blankets" against the winter cold, and provided it with food; telling him how when the wonderful Spirit—Life—wakes the seed-baby up from his nap and the Heat fairy warms him, he will eat and drink so much that he feels himself swelling and finally bursts his tough coat, and then thrusts a tiny leg (rootlet) down into the soil, and throws up a tiny green arm (shoot) above the earth. We shall let him watch the sprouting

of the seed by giving him mustard and cress to sow on moist flannel, and peas and bean seeds to lay on thin layers of cotton wool in bowls of water, and various seeds to sow in winter in little boxes of earth, kept in the greenhouse or in a sunny corner indoors, whence he may watch the ever-new miracle of the "quickening of life" in a tiny plant, traced from the seed up. We shall give him also different bulbs to plant in pots and glasses. We shall tell him about the colours and shapes and various uses of the fruits (see Chapter XV.), which he will find are cradles of seed-babies, which the flowers on the trees carried in their hearts when they were wee and green, and then filled out with sweet juicy pulp and painted pretty colours with the help of the Sunbeam fairies, for him to eat.

We shall teach him, remembering that his handling of them must be gentle and such as cannot hurt them,¹ to differentiate and recognise the chief parts of animals, and see how many each possesses: the limbs, wings, fins, feelers; the head, chest, gills, abdomen, the skin, feathers, fur, scales, and shell. To classify them now, like the flowers, not zoologically, but by their essential and obvious characteristics—for to make his own classifications alone will train his observing powers and give him real knowledge. Teach to note where each lives, and what its house is like; how they feed and move and talk, and how they are dressed; what tools have been given to them with which to do their work, and what weapons to protect them from their enemies—all parts of their bodies—what they are especially useful to, and how they look after their little ones; and what these are like, and their nurseries.

We may indicate to him all this while the broad division of all the things which he can see or touch, into that which is alive and that which is not. The living into animals and plants, the animals again into those animals which have backbones, and those which have none; telling him, for instance, that the fly and the grasshopper, the bee, the beetle, the crab and the sea anemone have no backbone or other hard bones inside them, but that the frog and the bird and the fish have, like himself. Tell him how the backboneless animals carry the hard parts of their bodies *outside* them, not inside, as we do, and what these are like in the different animals (see Chapter XV.); and how nearly all these animals

¹ Many insects may be examined under a tumbler turned upside down; and the mother will often find useful a good magnifying-glass.

breathe through slits or holes in their sides, and not, as we do, through their mouths. Show him the division of the "great back-boned family" again, who all breathe through their mouths, into those animals which feed their little ones themselves, like the cow and the mother-cat, and those which must go out and seek food for them, like the mother birds and the hens.

We shall show him how the sweet scents and brilliant colours of the flowers act as advertisements to the bees and butterflies, and how even their markings point towards the honey and lead the bees to it, and—giving him his first lesson in reproduction—tell him how these same insects, when they go to seek honey in the flower-cups, carry the yellow pollen powder on their hairy legs and backs from one flower to another to form the seeds in the heart of the flower itself. How, as the flower dies and shrivels, the seed—sometimes furnished with a tiny silky sail or a parachute, like the seeds of certain trees, and of the dandelion, thistle, groundsel and clematis—sails away on the wind, as do the seeds of the grasses, to find a resting-place under the soil, or is collected and planted by the gardener.

We shall tell him how the thorns of the rose, the hairs on the stalk of the primrose (which grows so close to the ground that the ants are specially likely to visit it and steal its honey), the hairs on the geranium bud, the gum on many stems and bristles on others, and even the downy bloom on certain delicate fruits, act as armour to the plants against the onslaughts on themselves or their possessions, of insect life, such as the slugs and ants and many others. Tell him how the colours and markings of the tiger and zebra, the grouse in the heather, the catfish among the rocks, the chameleon in the trees, the grasshoppers, green and brown, the caterpillars and plant lice, and many other insects are protective, and we shall probably be fortunate enough to find him a tiny, coloured spider, such as the writer saw recently—brilliant yellow—seated on the petal of a golden *eschscholtzia*, or, like one observed in a neighbouring garden, pale pink—taking the colour of an opening rose.

We shall show the child many pictures to illustrate the facts of his Nature study, and the homes and habits of the animals in distant parts, which last will afford scope for unlimited stories in a field full of interest and fascination for him. We shall also seek

to further interest and impress his Nature knowledge by reading and telling him many little Nature stories and poems, for which the following may be suggested:—

Emilie Poulsson's "In the Child's World" (George Philip & Sons, London).

Andrews' "The Stories Mother Nature told her Children," and "The Stories of My Four Friends." Gould's "Mother Nature's Children." Eddy's "Friends and Helpers." Hardy's "Sea Stories for Wonder Eyes" (Ginn & Co., London).

The well-illustrated "Shown to the Children" Series, which include "Beasts," "Flowers," "Trees," "Birds," and "Sea-shore." The "Look-About-You" Series and the "Dwellers" Series, including the "Garden," the "Pond," &c. (T. C. and E. C. Jack, London).

It is very advisable to encourage the child to model his fruits and seeds (see *Clay Modelling*), and by drawing diagrammatically and painting the flowers and leaves in his own way without any formal teaching to represent many of these.

Brush-drawing with camel's-hair brushes moistened in water-colours—special cartridge paper should be procured if possible—is especially suitable for leaves, flowers, and fruits, and by it the child gains no little knowledge and appreciation of their forms and colours. The mother will obtain good suggestions for this brush-drawing or painting from Elizabeth Yeats' "Elementary Brushwork Studies" (George Philip & Sons, London).

Drawing is perhaps the most practical and useful art of all, and it is therefore wise, quite apart from its æsthetic consideration, to encourage it in the child. If he has the gift which makes the artist he will show it soon enough, and his hobby will give place to special training, but even if he forms one of the majority who have not this special gift, he will still gain incalculably by such a training of his eye and hand as will allow him to represent on paper what he has observed or wishes to create. The medical and scientific student know the value of diagrammatic drawing, and the budding engineer includes it as an essential part of his training; and the amateur designers, carpenters, and dressmakers who can draw diagrammatically what they wish to construct are twice equipped.

Drawing also teaches the child to see more correctly what he looks at, and impresses on his mind more thoroughly what he

has seen. The fact that it is, as the Bushman cave paintings in South Africa to-day show us, the first written language or self-expression of a race, would indicate to us how natural it is for the child to draw. "It is but a visual language, and should be as natural to the child as reading or writing." The child's first drawing must be, however, entirely diagrammatic—that is, he must draw the thing as he sees it. He will at first often wish to draw the outline of a simple object placed on a piece of paper, and when he knows it he will wish to represent his own idea of it; and the child should very essentially copy *objects* always, and never pictures.

CHAPTER XV

FIRST LESSONS

“ We may see how all things are,
Seas and Cities, near and far,
And the flying fairies' looks,
In the picture story-books.”¹

—R. L. STEVENSON.

A SKETCH of the brain and its functions would seem a necessary prelude to the right understanding of the two separate considerations of the growth and development of the child's brain.

The adult brain, which is enveloped in filmy coverings or “membranes,” and divided into several definite parts, consists of soft grey and white material. The grey consists of a number of microscopic “cells,” each possessing a number of fine branches, which connect one cell with the other, and some of these cells are collected into special groups with a special and definite office to perform. The white material consists of long, conducting, filmy “threads,” each originating from one of the grey cells; and these threads, which collect into “bundles” or strands, run down from the brain into the soft *core* of grey and white material, which fills up the canal running through the backbone or spine. From the grey cells in this core run out fresh threads, which, again collecting into strands, pass out through gaps in the spine, to form the “nerves,” which go to all parts of the body; and thus, indirectly, the brain is connected with each part of the body.

The whole arrangement of the brain and nervous system has been likened to the telegraphic system of a large city, and this is a perfect simile. The brain itself, in the region of the cells, where the first-mentioned “threads” have their origin, is the room in the general post office where the electric batteries are, which receive and send off messages. The “threads” are the telegraphic wires which convey the messages from the head-office to the grey areas

¹ “A Child's Garden of Verses”: Picture Books in Winter.

in the spinal cord, which are the branch district post offices. Thence, by the nerves—the messengers—are sent the various messages to the feet, legs, arms, stomach, &c., which are the houses in the city; and, conversely, messages are sent in the opposite direction from the body to the brain. The wires are constantly in use: when the finger touches a hot surface a warning message flies along the nerves to the brain, and the brain flashes a message by a separate wire to the muscles of the finger, telling them to “contract” and move it out of danger of being burnt.

Messages of sensation (touch, taste, sight, hearing) and movement are constantly passing from the first day of the baby’s life, but the power of thinking and reflecting on their meaning, and of governing all its movements intentionally, only comes as it grows into early childhood, when the consciousness of self begins to dawn. And at the same time the “convolutions” or crinkles on the surface of the brain begin to unfold and to mature; for the brain was aptly described by a little school-girl when she said, “The brain is the part of the body you think with, and the more you think the more crinkles there are.”

At birth the child’s brain weighs rather less than a pound; its growth is rapid, and at seven years it weighs rather less than two pounds; at fourteen years rather less than three pounds, and in its adult state rather more than three pounds.

All the cells in the new-born baby’s brain are small and ill developed, as are the conducting threads, and the difference between the white and grey material is hardly perceptible; the crinkles also are indistinct and difficult to trace. The *nerves*, however, which run out from the spinal core to the different parts of the body, and those that supply the eyes, ears, and nose, are already well developed, and in this chiefly lies the explanation of the fact that the nervous system of the baby and young child is so markedly unstable. The brain or head-office is newly built and its staff not yet organised, and therefore its controlling influence is absent to a large extent in the service, and the district offices have to largely carry on all the business of the body. They very easily get over-excited, when important messages come and have to be sent off, and easily over-tired when too many messages reach them and have to be dealt with; hence the child is more likely to have convulsions when its health is upset, when it has had a fright, is in pain, or cutting a tooth;

and its temperature runs up and down more easily when it has a chill or when its digestion is out of order than an adult's ever would under similar circumstances. We can see also from these facts that the baby and young child must not be excited, frightened, or mentally forced in any way whatever. It is obvious that the development of a child's brain is brought about by a series of extremely complex processes, and that during the time that all this development is in progress its nervous system is naturally very unstable, and more so still in the child of nervous inheritance.

If we are wise we guard all children from nervous strain or constant excitement, we give them plenty of sleep, and exclude from their diet all nervous stimulants, such as tea, coffee, and alcohol.

We appreciate also the value of careful and correct training from earliest infancy, since by accustoming the baby to good habits, the development of its mind must proceed along the right lines.

Since the brain is thus immature and therefore unprepared, we cannot with safety give it any serious exercise before the age of seven, and no child should attend a school until it has reached at least this age. For the nervous child, or the clever forward child, the time may with advantage be delayed another year or so. His childhood should be a long one, and he should be allowed to "learn by listening and observing" in a free outdoor existence. Such a child will be much better prepared in this way to withstand the nervous strain which his life will mean to him in later years.

Education we may and must give the child from his earliest infancy upwards, but an education which is based on lines indicated by the mind's own natural development, remembering besides the physiology of the brain and nervous system, that in the language of psychology during these first early years the mind is at first "perceptive and imaginative," and only later "conceptive." That is, that the child at first only perceives and imagines, and we must therefore educate these perceptive faculties by giving him material which he can see and handle and learn about with his senses, and with which he can represent and see for himself what we teach him about, and which will stimulate his imagination. And only later can we expect him to conceive of things he has never seen and form general notions about them and the facts he perceives.

The school life of inevitable routine and enforced attention to

set occupations imposes too severe a test on the as yet imperfect brain and nervous system. The child *must* move, and move constantly—sitting still for any length of time is unnatural and harmful to him—and his power of concentration is as yet very small; hence no formal teaching is permissible, and in all the occupations and amusements which we give the child, we must remember that he must “lead,” though we guide, for only thus can we avoid forcing him unnaturally and harmfully. The little ones of the poor have no home education; their homes—sad travesty of the name—too often do not allow of it, and their mothers, if they had the ability, have not the time to give it to them. For them the Infant School must fill a need, to secure them from the haphazard and dangerous life of the streets, and from inevitable or wilful neglect; and were our kindergartens ideal, universally small, and their work and methods carried out in accordance with Froebel’s intention and ideals, their value to these children and to society would be unquestioned. But the fortunate little ones whose lot is cast amid happier circumstances gain incomparably by the postponement of school life for a year or so longer. If, however, the child of four or five must be sent to school, a kindergarten, as worthy its name as may be, should essentially be selected. If such is not available, it may sometimes be possible for two or three mothers to join, engage a well-qualified kindergartner, and have the children taught at home. In the absence of such an arrangement, little home lessons, when he has passed his sixth birthday, will be of such undeniable benefit to him, in developing and guiding his activity into the right channels, rather than those which it may find if he is allowed to run wild, and also in enabling him to receive his first knowledge under the ideal conditions of individual attention, that the mother may well undertake now, if circumstances permit of it, his first teaching in, at any rate, Nature study, general knowledge, geography, and history, and as he advances in his sixth year, in reading and writing. I think that no educational authority will deny that the last two can be taught, with infinitely more satisfaction to the teacher and benefit to the child, individually than in class, and the child will have much in his favour if he enters his school life with this foundation laid. The mother may now give him little lessons of at first half-an-hour daily, inclusive, divided into short periods of not longer than a quarter of an hour, in the

form of "information talks" or "object lessons," and amplified stories in geography and history, &c. Suggestions, necessarily brief, are given as to the methods and material for these little lessons which may prove useful, perhaps especially to those mothers in more remote country districts, particularly in the Colonies, where first educational facilities are often absent. The mother will find useful and suggestive such books as the "Month by Month" and the "Day by Day" Series (Geo. Philip & Co.); Plaisted's "Early Education of Children" (Clarendon Press, London); and other books subsequently referred to under the separate headings.

"INFORMATION TALKS" OR "OBJECT LESSONS"

These little talks are valuable aids to the general education of the little six-year-old. The object of them is to "tell him, in the most interesting way, the most interesting facts about ordinary things." They should be quite informal little discussions, taking place out of doors or indoors, but they must centre round an object or objects, with pictures of this, or, failing an object, which will seldom obtain, only pictures. These objects are necessary, since again, as Froebel says, "The undeveloped mind needs something it can perceive with its senses in order to arrive at an understanding of the truth about it. . . . From objects to pictures, from pictures to symbols, from symbols to thoughts leads the ladder of knowledge." It is surprising how much one may bring within the comprehension of a child which will instruct and interest it concerning quite ordinary things, and the mother, if she would interest the child, should lay special stress on the activities and the uses (in the wider and not too utilitarian sense of the word) of the things chosen. The less the child knows that he is being taught the better, and the sand and clay (see Chapter XIII.) may well be at hand, and the child encouraged to represent as far as possible what he learns about. The mother will find useful a good encyclopædia, and Hassall's "Familiar Objects of Everyday Life" (Blackie & Sons) or Sandford's "Talks with the Tinics" (Pitman & Sons, London) will be a useful guide and collection of suggestions for the lessons, and in Nature the mother will find "objects" innumerable about which to inform and in which to interest the child.

Useful "objects" may be, for instance, selected from the following :—

A Piece of Bread.—Ploughing the fields, sowing the seed, the green and yellow corn-fields, reaping the corn, thrashing the wheat grains away from the straw, winnowing the husks or chaff away from the grain, the miller and the windmill, crushing the grains in the corn-mill, and sifting the white flour away from the bran, the baker and his oven, the baker's shop, the pastry-cook's, and the confectioner's.

A Lump of Sugar.—The cane fields, the notched sugar-cane, cutting the ripe sugar-cane, crushing it in the sugar-mill to squeeze out the juice, boiling it in the great pans, the separation of the sugar into little crystals, the treacle left over ; the sugar we get from beetroots and the American sugar-maple tree.

A Spoonful of Tea.—The tea shrub, the tea plantations, the plucking, and rolling and drying and heating of the leaves, the chests of tea shipped over the sea, the grocer's shop and stock, his weights and scales and till.

A Spoonful of Honey.—The bees' nest or hive ; the Queen Bee and the fat lazy drones, her guard of honour. The active little working bees who build the comb with wax from their "wax pockets," clean the hive, and mend it with gum from the plants, and cool it by fanning with their wings. Who fly forth to the flowers and return laden with honey in their "honey bags," and pollen in the "pollen baskets" on their little hind-legs, and who have stings to secure them from interference with their important work and enable them to drive away enemies and robbers from the hive. The nurse bees, who hollow out the waxy cell cradles for the bee babies, and feed them with honey and pollen dust, and then use up the pollen left over to make the dark "bee bread" and store it for the winter. The babies laid by the Queen as little white eggs in the cell cradles, who turn into grubs, and when they have grown fat on the nice food prepared by the nurses, put on silk robes and go to sleep, while the nurses cover their cradles with wax, and when they wake, eat a hole in their cradles and crawl out with a striped brown velvet dress, and wings like the grown-up bees. The swarming away to form a new colony of the Queen Bee and her drones, and many of the workers, on a bright sunny day, when a princess is born, whom the nurses feed on a special sweet jelly. The use of bees to the flowers (see Chapter XIV.), in helping them to make their seeds.

A Reel of Cotton.—The cotton fields, the cotton plant with its bursting pods full of soft white down and seeds ; cotton wool—the down with the seeds washed away ; spinning the cotton into long threads at the factories, weaving the threads into cloth ; the uses of cotton.

A Woollen Shoe.—The sheep, the lambs, the shepherd, dipping, shearing, the bales of wool, sorting and cleaning the fleeces at the factory, spinning the wool or weaving it into cloth, the uses of wool.

A Cup.—Clay, its source from the earth, the potter and his wheel, the firing, glazing, and decorating of the china, the china shop, its contents and their uses.

Some Blades of Grass.—Meadow grass, cattle and sheep pasture, haymaking, haystacks, thatched cottages, lawn mowing and rolling ; the cereal grasses—wheat, oats, barley, maize, and rice—whose seeds are so

useful to us ; river reeds and bulrushes ; the notched sugar-cane ; the very tall bamboos of the warmer countries, with their notched hollow stems, so useful for making all kinds of furniture, walking-sticks, &c.

Different Flowers.—The child may be told very much about the different flowers, their appearances and uses, haunts and habits. The essentials in the lessons being, I think, to teach the child to love them and appreciate their individual beauties, and to cultivate his observing powers, the following hints are given with this end in view.

Show the child how nearly all the flowers grow out of a protecting green cup or collar of little leaves, the same which he saw snugly wrapping up the flower when it was a bud. How in a few flowers, like the fuchsias and nasturtiums, the fairy columbines and larkspurs, these leaves are coloured like the petals. Talk to him of the coloured part of the flower as its “crown,” and of the petals as “wings” forming this crown. Teach him to note the colours of the wings forming the crown of each flower ; the shapes, whether all the same or different ; and the numbers, whether few or many.

Show him how the centres of some flowers are like “eyes” looking out from the middle of real crowns ; sometimes wee and peeping out, sometimes widely opened, staring at him. Like the rosy-tipped daisy who opens her eye with the day and closes it at night and before a shower, and her cousins the sunflowers, the corn-flowers, whose crowns are like little blue wreaths, the dandelions, the starry asters, single chrysanthemums and dahlias—telling him that the “eyes” of all these flowers just mentioned are made up of numbers of perfect tiny flowers. Like the buttercups and speedwells and forget-me-nots, with their golden and sky-blue crowns, the wild roses, the fragile poppy with its dark eye, whose green collar we never see, because it falls off as the flower comes out and spreads out its wings, which seem to be made of silky “tissue paper” ; and the geranium, with a tiny fringed “eyelash” (the forerunner of the crane’s-bill or beak seen on the little fruit or seed-case) in the midst of its “eye.”

Show him how in some flowers the four wings of the crown form a cross, like the single wall-flowers and stocks.

Show him how in other flowers the wings of the crown join to make a cup or bell, like the bluebell, who droops her head to protect her honey, stored there, from the showers for the bees ; the spotted foxgloves and Canterbury-bells ; the heaths, with their delicate waxy bells, and the heather covering the hills and moorlands, with its clusters of hundreds and thousands of tiny pinky-purple bells, who love the free, open, airy places. How in others the wings all join to form a trumpet, like the creeping convolvulus, who closes up when the sun is not shining on her, and the crumpled petunias.

Show him how in some other flowers the crown sinks down into a little horn, like the primrose, the cowslips with their very tall green collars, and the periwinkle with its dark green glossy leaves straying over the banks ; or in others into a tube, like the trailing honeysuckle, which we can generally smell before we can see it.

How in some flowers the two lower wings of the crown join to form a tiny boat, like the gay and fragrant sweet-peas, the laburnum and wistaria, with their golden and purple chains, like the broom (*planta*

genista) which "along the copses runs in veins of gold," which may well be a proud little bush, since a whole family of kings was called after it; and the useful scarlet runner; like the gorse, which the bees love and the sheep nibble in the winter, and the bunnies like to burrow their homes among, which goes on blooming for such a long time all over the commons and waste lands, and likes the sea-breezes. Like the little clover, which the cows delight in, and which gives the bees honey when other flowers are difficult to find, with its little round cluster of many flowers, each spreading its wings round a tiny boat. Tell the child how the seed-babies of all these plants live in little pod-cradles, like the green peas he eats.

Show the child how in some flowers one wing has a little horn (spur) on it, like the shy, nestling violet, who hides her sweet-scented honey here, and her big painted velvet cousins the pansies. How in others, like the beautiful fairylike columbines, each wing has a little horn sticking out of it; how these flowers, mauve and purple, and white and pink, grow out of a little cup of leaves the same colour as the wings, and look just like five little fairies flying together. How the fiery red and yellow nasturtiums (cousins of the little water-cress), who came to us from South America, with their cool leaves, round and ribbed just like green fairy parasols, and their hot stinging seed-cradles—all grow out of a little collar of leaves coloured like the wings, and how this sticks out in a very long horn (spur) behind; how the flowers on the larkspurs have also a spur. Tell the child how these little horns or spurs are the "honey-jars" of the plant.

Show the child how the rose unfolds her many wings, one by one, as if she were lifting aside fairy curtains for him to peep inside. And what lives inside a flower? Tell the child how in the middle of the crown or cup or tube of nearly all the flowers live the father and mother parts of the plant; how the father parts of the plant have tiny heads dusted over with yellow pollen powder and long thin stalks, and they live next to the crown; how the mother parts are in the very centre, guarding the cradle for the seed-babies. Tell the child how, when the Love fairy whispers to the plants, that the best thing plants can do is to make little seeds; they make sweet-smelling honey—which they store in little pits or gutters low down on their wings, or in special little honey-jars—and the sunbeam fairies help them to paint their wings bright colours. How they do this, because they know that the bees and butterflies will come to visit them when they see their gay wings or smell their sweet scents, and will bring them pollen dust from other flowers sticking on to their hairy little legs and backs, to help them make their best and strongest little seeds. Tell him how the plants make their honey because the bees and butterflies feed on it, and the plants know that, if they want the insects to do something kind for them, they must do something kind in return. Tell the child how carefully the mother parts of the plant care for the seed-babies when they have made them, and they lie snugly in the cradle; how they wrap them up and make plenty of food for them, and store it among their "blankets," and then put them on a tough "overcoat," because they know that the seed-babies cannot go on living with them, when the flowers die, and their wings fly down, and that the seed-babies will have a long sleep before

the good spirit, Life, wakes them up, and they begin to grow into little plants.

Show the child how some flowers, which belong to a different "family" to those we have been talking about (except the fuchsias), neither grow out of a little cup of green nor of coloured leaves, but use all their coloured leaves and wings to make a pretty cup or bell. Tell him that the reason why they do this has something to do with the way in which the mother parts of the plants wrapped them up as seed-babies, and arranged their food for them, which was different from the way in which the mother parts of the other plants wrapped up their seed-babies. Such flowers are the tulips, whose turban-like crowns have such brilliant colours that they need no scent to coax the bees to visit them, the crocuses, the hyacinths and the many lovely white and coloured lilies living in the garden or hot-house, the lily of the valley with her lasting scent and little "snowy bells." The beautiful white water-lilies with their yellow centres, sailing on the streams and ponds, which are like fairy boats unfolding their many silvery white wings like sails; the yellow water-lily whose wings form a great yellow lamp-globe, and their cousins the lotus on the Nile, and the beautiful sky-blue water-lilies seen in the warmer countries. The flag-like irises; and the arums, which cover whole fields in South Africa, as the daisies do in England. The narcissi, which have a second little crown inside their real crown, and the snowdrop, whose second crown is green tipped; and the daffodils, which have a bell inside their crowns, where the bees play hide-and-seek, as they do in the foxgloves. Tell the child how these plants—like all those of the other family who live to be old plants and go on blossoming each year (perennials), like the daisies, primroses, and carnations, and do not die each year, like the poppies and sweet-peas (annuals)—work hard during the summer to store up plenty of extra food, so as to start growing up again early in the next year; and how they keep their food stored underground in "bulbs," &c. How some of the plants, like the onion plant and the potato plant, give their little "storehouses" to us to eat. Tell him how the bulbs of plants, like the hyacinths and tulips, will grow into little plants just as their seeds do.

Show him how the very little flowers often live together like a happy little family on one stalk, either in clusters, like the cherry-pie with its perfumed purple clusters; the meadow-sweet, with its umbrella-like clusters of fragrant creamy blossoms, and the brilliant sweet-williams—like little round fairy carpets of rich crimson velvet. Or sometimes in long spikes, like the lilacs, the forget-me-nots, curling at the top, where the pink buds are, the heaths, tuberoses and lilies-of-the-valley, and how this saves the honey-seeking insects, especially the busy bees, a lot of time.

Tell the child about the different wild flowers and their haunts and times of blooming, as far as possible showing him pictures of each where the flowers are not available; about the different garden flowers, the garden, the flower-beds and borders, and walks, and the rockeries. Tell him about the gardener's tools, digging, raking, sowing, weeding, watering; the flowers of different seasons, the greenhouse, the hothouse, and the lovely flowers from the warmer countries which bloom there.

As the child grows older tell him about the leaves and their wonderful work in plant life; how they are the digestive organs no less

than the lungs of the plants, since in them, by means of their green "cells" (see *Cells*), the plants, with the help of the sunbeams, digest the food materials they take in from the air and up from the water and soil, and transform them into the food juices—which pass up and down the plant through little tubes or canals, and can be seen oozing out if a stem is cut across in Spring—and the materials with which they nourish and build up their "bodies." Tell him how the plants can make that which is not alive—such as the iron, lime, &c., reaching them from the water and soil, and the "carbon," reaching them from the air—into that which *is* living—that is, can make their own food, which we cannot do, and also often our food; for they make such foods as starch, sugar, oils, and flesh-forming foods, and even the thin jelly-like material (or *Protoplasm*) with which they build up the cells of their "bodies." Thus as the child comes to know what a cell is, and how the body of a plant (like an animal) is built up of cells, and how it grows by division of each cell, as this takes in nourishment and enlarges into two cells, he will realise that plants in very truth live, since they not only sleep and breathe, and eat and digest and absorb their food, and grow, but, forming seeds and specially caring for them, reproduce themselves.¹

Tell him how the different parts of the plants are adapted for the life they lead—how the stem of the little garden plant is soft and slender, how that of the forest tree is hard and strong, bearing many leaves and branches; thick and juicy—storing water—in the cactus who lives in the dry plains and deserts, &c., &c. Tell him the reason of the marking of the flowers (see Chapter XIV.). Tell him how the many petals of the "double" flowers of the daisy family are the tiny blossoms of the "eye" or centre, turned into extra wings under cultivation; and how in others, like the rose, these result from the transformation of the father parts of the plant (or stamens) into wings. Teach him to look forward to the more detailed study of the plants which will be unfolded by the microscope.

Peas or Bean Seeds or Soaked Almond Kernels.—Tell the child about the structure of a seed² and how it "germinates" or begins to grow (see Chapter XIV.). Tell him how the seeds of most flowers are like tiny nuts, how the seed-babies are wrapped in blankets stuffed with food, and over this a tough overcoat to keep them snug and safe. How they all live in a green cradle at first. How some live in a long pod cradle—peas and gorse—some in a round cradle, like the poppies, orange trees, and pomegranate bush with its pretty scarlet blossoms; some in a leathery or wooden cradle, like the nuts and acorns. How some seeds or their cradles are adapted to travel on the wind (see Chapter XIV.), like the cotton seeds, whose silky sails give us wool, and cotton. Tell him how useful some seeds are to us, like the cereal grains, coffee and cocoa beans, castor-oil seeds, mustard seeds, nuts, &c., as well as the vegetable seeds, peas, beans, and lentils.

A Potato.—Tell the child about the kitchen garden, about the

¹ The mother will find useful, for facts concerning plant life, Grant Allen's "Story of the Plants" (George Newnes, Ltd., London).

² A simple description and illustration of the structure of a seed will be found in Arabella Buckley's "Fairyland of Science."

various underground vegetables—the “storehouses” of the plants—such as the potatoes and onions and carrots. About those which consist of the leaves, stems or flowers of the plant, such as the cabbages, spinach, cauliflowers, &c. About those which consist of the seeds, such as peas, beans, &c. About those which are the fruits of the plants (see *Fruits*), such as tomatoes, cucumbers, marrows, &c. Tell him about the trellises and frames; the insects which visit the vegetables—the slugs, snails, “wire-worms,” and other garden insects. Tell him about the market gardens and vans, the market, and the greengrocer’s shop.

An Apple, or other Fruit.—Tell the child about the apple-tree, who gives us her pretty pink blossoms with their crimson ball buds to look at and for the bees to sip honey from. Tell him how she guards the seed-babies in little green cradles, very wee at first, in the heart of each blossom; how when the dainty petals fly down she grows some leaves to shade the cradles, which are growing bigger each day, and to catch the raindrops and dewdrops. How then as time goes on she swells out each cradle with juicy pulp, and paints it a warm red, and makes it very sweet with the help of the sunbeams, and then gives it to him to eat. The orange tree, who grows in the warmer countries, green all the year round, whose perfumed white blossoms each hold a tiny green cradle of seed-babies, which with the help of the sunbeams she paints golden as time goes on. Tell the child how many of the oranges travel in boxes over the sea to England, and how the orange tree gives some of her blossoms for brides to wear, and gives us our marmalade and candied peel. The plum and apricot trees, who put a single seed-baby into each little egg-shaped cradle, and paint them purple or green or golden, and powder them with bloom to keep away the insects. The creeping grape vine, who lives at the top of the hothouse, or out of doors in warmer countries, who carries her cradles in bunches on her long slender arms, and spreads out her pretty, large, cool leaves over them to shade them; who paints them sometimes green and sometimes purple, and gives them to us to eat, and to make the sparkling red and white wines, and the raisins and currants. The palm-like banana tree of the warmer countries, with its soft stems and its tuft at the top of very large green leaves, all rolled up at first, when the bats love to hide in them, and gradually unfolding; how she carries her bunches of long finger-shaped cradles on her arms, and paints them yellow. The olive tree in the warmer countries, with her smooth, leathery, evergreen leaves, who puts a single seed-baby into a cradle, and makes oil and stores up there; who gives us our olive oil, which the little Italian and Spanish children eat and use as we use butter and cream. The strawberry plant, with its little cut-out leaves living as three little brothers on a stalk, as the clover leaves do, and turning crimson, like its straying stems. Its pure white blossoms with their golden eyes, and the tiny seed-babies scattered over the little red cradles; how it grows not only in the garden, but wild in the woods; the bush fruits, such as currants, gooseberries, &c.; the colours and uses of the other fruits. Tell the child about the fruits the plants give the birds—the rose-hips, and the mistletoe berries which a certain kind of thrush is very fond of, and the purple-black ivy berries which the hungry birds are glad to eat in winter.

Pruning.—Tell the child how the gardener came along at the end of

the winter with a little hooked knife and trimmed the apple-tree by taking away some of her boughs, because he knew that if they stayed there they would use up too much of the food-juices, which begin to come up through the tree in the spring, so that there would not be enough to make the seed-cradles grow big and full of sweet juice. And how the apple-tree was glad to let them go, because she knew that she would be so busy looking after the cradles that she would have no time to grow a lot of green leaves and branches, like the oak trees and beeches; and also that too many leaves would keep away the sunshine and raindrops and dewdrops from the seed-cradles.

Grafting and Budding.—Tell the child how the apple-tree sometimes lets the gardener take some of her buds or shoots and plant them in another apple-tree, to live there and help it to grow strong and make fine apples.

A Nut.—The hazel-nut tree, with its tasselled father flowers or catkins; the little mother flowers on the branches guarding the small green seed-babies in their leafy cups, and, as the autumn comes on, wrapping each seed-baby up in "blankets" stuffed with nice white food, and putting it into a little brown wooden cradle to keep it warm and safe; who gives us our nuts, and the squirrels and field-mice also. Tell the child about the nutting expeditions, the English hedges, their flowers and berries, birds' nests, and rabbit warrens. The squirrel, with his bushy tail and tree-home, his swift flight from branch to branch, and the nimble fingers and sharp teeth with which he cracks his nuts and acorns. The grub babies, who like to make their nurseries in the nuts; whose mothers, the little weevil beetles, bore a hole in the cradles and lay them there as eggs, which turn into grubs. The tall slender cocoa-nut palm-tree, with its pretty sweeping tufts of big feathery leaves at the top, who has such very large seed-babies. Tell the child how she puts a single seed-baby into a hairy wooden cradle, and wraps the seed-baby in "blankets" with plenty of nice white food, and puts milk into the cradle when the seed-babies are young. How she often lives on an island and has to provide well for her seed-babies since she often drops the cradles into the sea, and the sea washes them away on the breakers to take root on another island. How the cocoa-nut tree gives us not only the cocoa-nuts, to eat and make sweets from, but the coarse hair from the cradles to make our mattresses and door-mats. The walnut tree whose seed-baby has such a wrinkled overcoat, and whose wood is so useful to the cabinet-maker, as is that of the great oak tree with her spreading branches, great height and great age, whose seed-babies the squirrels love. The Brazil nut tree who puts several seed-babies into a cradle, as do the chestnut trees. The pretty seed-babies of the horse-chestnut tree, which we do not eat, and her pretty flowers like tall pink and white candles.

A Sovereign.—Gold mines, the dark underground galleries, the little trucks on rails, the lift "cages" running up and down, drilling the holes in the hard rock, setting the dynamite in them and blasting the rock, taking the ore up to the surface, crushing it to powder by the great stamps, separating the gold and roasting it, and pouring it hot into moulds, out of which come the heavy bars of gold, shipping them over the sea, the Mint, the various coins, the jeweller's shop and its contents.

An Ostrich Feather.—The ostrich farm, the ostrich's nest in the sand, its great eggs, its great height, strength and speed, its small useless wings, strong legs, and deep bellowing cry, its indigestible diet, the clipping of the feathers.

A Penny Stamp.—The post, the postman, the mails, telegrams, cables.

A Bit of Cheese or a Glass of Milk.—The cow, her house, and winter food, the summer pastures, the milking, the dairy, cream, cheese, butter.

An Egg.—The poultry yard and its various inhabitants, the roosts and nests and duck ponds, the food, and dust or sand baths ; the brooding hen, the hatching of the chicks.

A Brick.—The moulding and baking of the clay, and its source from the earth, the building of a house, painting, papering, the carpenter's tools.

A Piece of Coal, or the Fire Burning in the Grate.—Tell the child the origin of coal from the plants of the marshy buried forests of long ago. How these plants which we often see pictures of on the coal, had no pretty flowers and were chiefly giant mosses and ferns, &c., though the sun shone on them. How these plants worked to store up something, with the help of the sunbeams playing over them, and kept it to be useful to the world long after they were dead. Tell the child about the tunnelled coal-mines underground, the miner, his truck and pony, his lamp, his pick and shovel ; how the coal burns in the nursery grate, and yields the gas to light the room, and cooks our food, and drives our engines.

A Flag.—Flags of the different nations, flag-signalling on land and sea, the ensign and fluttering pennant, flags in war time, in national mourning and national rejoicing.

A Horseshoe.—The horse, his hoof and mane, the blacksmith and his forge, the horse's harness, his food, and his house, his intelligence and uses, his breaking in, his paces, wild horses, lassoing, the cart-horse, the cab-horse, the race-horse, the war-horse, the circus-horse and his feats, the long-legged colts, the farm pony, the shaggy Shetland pony.

A Tortoise-shell Comb.—The tortoise, his home on land and in the water ; his strong armoured shell, with its shield and breastplate, and his great age ; the turtle, her paddle feet, her hind flippers with which she digs her nest-hole in the sand ; her eggs left to be warmed by the sun till the baby turtles, who are born without shells, are hatched and creep down to the sea ; the tortoise-shell she gives us, and the fate of the green turtle as turtle soup.

Sea Shells.—Tell the child how the animals who have no backbones (see Chapter XIV.) or other hard bones inside them as we have, carry the hard parts of their bodies outside them, to protect their soft bodies. How some grow thick hairy coats, like the spiders ; or some have little horny rings fastened into their coats, like the bees ; or hard horny sheaths over their front wings for armour, like the shining black and bronze beetles of all sizes, who often shine like jewels in the sunlight ; or crusty coats, like the crabs and lobsters and shrimps, who carry a strong shield and breastplate to protect their heads and chests.

Tell the child how some animals, like the oysters and periwinkles, wrap themselves in wonderful mantles, and by means of these (how they do it is a fairy story which he will hear later) build themselves shell-houses and enlarge these as they grow older. How some live in

houses made of two shells, hinged together, with a separate floor and roof, like the oysters and mussels ; and some live in one, like the periwinkles and whelks and limpets, and their cousins on land the snails.

Tell the child about the oyster fixed to the rocks in his bed beneath the sea. How he lies wrapped in the folds of his wonderful double mantle, with which he built his safe double-shell home, with material he picked out of the waves, and added to it as he got bigger. How he keeps his doors open in the water, so as to breathe with his delicate fringes (beard), and drink in the food from the water, but shuts his doors tightly when an enemy appears, though he has no head to poke out and see it with. How he has enemies in the sea, as well as in the diver who comes down to steal the beautiful pearl he sometimes makes with his mantle. Tell the child about his cousins, the periwinkles, who feed on the seaweeds, wrap themselves in a single mantle, and live in a single shell-house with a horny front-door, but rejoice in heads with two little feeler-horns, which they can poke out when they open the door and see all round them with. Tell him about the familiar limpets, whose shells look like the tops of little umbrellas, who cling so close—by means of the one large “foot” that each possesses—to the rocks, and wear away a little basin underneath them, but put out their little horned heads sometimes, and crawl away to feed on the seaweeds. The tiny white “acorn shells” crusting the rocks and piers, who have a little round window at the top of their shell houses, through which they put out and wave delicate fringes in the water in search of food when the tide comes in. How these fringes are their little legs, and they stand on their heads on the rocks or piers, and “kick their food into their mouths” (Huxley).

Tell the child about the fighting crab, carrying his strong crusty shield on his back and his breastplate in front of his chest, scrambling along the wet sand, or burrowing to hide himself in it. How he runs so quickly because he has so many legs, each with several “knees,” like his distant cousin on land, the spider. How he fights his enemies with his powerful claws and seizes his prey in these, and carries his hard “teeth” in his stomach to bite up his food with. How he swims about in the sea as a baby, and before he learns to run about ; and how he changes his entire coat, crawling out of it with great difficulty as he gets too large for it, and hiding in a quiet pool until his new coat gets hard.

Tell the child about the seashore, the paddling and bathing and sand-castles, the shells and seaweeds ; and the little sandhoppers (cousins of the shrimps and grasshoppers), hiding in the sand and dry seaweeds, till the tide comes in, when they skip down to the sea and bathe in the little waves, and feast on the food the sea brings in for them.

Tell the child about the sea, its various uses to us, its various plant and animal inhabitants. Tell him about the great whales, with their smooth coats and huge mouths, and their big tails, with which they chiefly sail along. How the whales are warm, and breathe through their mouths, while nearly all the bigger sea-animals breathe through slits in their sides. How they come up to the surface to breathe, and send up fountains of spray from their nostrils, which are on the top of their heads. How they give us blubber from their fat, which is the butter of

the little Eskimo children, and horny whalebone for making our clothes, from inside their great mouths. Tell him about their little cousins the smooth porpoises, who roll and dive through the water in numbers together after the herrings and other fish. Tell him about the myriads of tiny creatures in the sea, and the "minute glow-worms of the sea," who make the beautiful silvery phosphorescence seen at night. Tell him about the diver, who goes down in his funny suit to fetch the oyster's pearls and the sponges and the pretty coral.

Tell him about the jellyfish floating about in the sea, with its huge expanding dome like a lampshade, and its long streamers with which it defends itself by their poisonous stings from its enemies, and with which it draws its food into its mouth, till a lordly whale comes sailing along, or a porpoise rolls by, and gobbles it up for dinner.

Tell the child about the rocks and the caves and the pools. The anemones clinging to the rocks and expanding their beautiful coloured fringes (their delicate arms), to gather tiny shrimps and other fish food into their mouths inside, and then withdrawing them and shrinking into a little heap. The starfish with his five arms, who creeps lazily along the sand or rocks on his tiny legs, which he carries under his arms, whose mouth is in the middle of him, underneath ; who does not mind a fight, as he easily grows a new arm, but is often eaten up if a hungry cod-fish comes along. The sea urchin, the little hedgehog of the sea, who bowls along on the jointed spines of his prickly and knobbly box-like house, and walks on tiny legs, which he puts out through little holes in it ; who feasts on the seaweeds, and fights his enemies with his spines, and hides away among the rocks. The catfish, peeping out with his gleaming green eyes from the chinks of the rocks, with his many strong arms, with which he fishes for his crab and fish food, and, drawing it in, crushes it up and thrusts it down into his stomach ; how he swims backwards, squirting out the water from a little fountain in his side. How, when he spies an enemy, he changes his colour to that of the green or blue sea, or the brown of the rocks, or sometimes to crimson, while he hides, or else swims away hurriedly, squirting ink from his fountain to darken the water round him so that he cannot be seen.

A Sponge.—Tell the child about the wonderful jelly sponge animal who weaves his differently-shaped sponge house, with its many passages connecting large "doors" with small "doors," so that the sea water can flow all through it and bring food for him to eat, and then squirt out again in little jets. How the sponge animal grows little buds, which break off and swim out into the sea by means of their tiny fringes ; how these little creatures grow big like their mothers, and then take up their quarters on a rock and weave their own homes.

A Coral Reef.—The wonderful little jelly animal, who is a cousin of the sea anemone, who lives in the warm seas and builds up the beautiful coral trees. Tell the child how it picks the material out of the waves with a fringe of tiny arms, with which it also sweeps its food into its mouth, and builds round itself a fairy-tree palace. How it grows little buds out of its jelly body, each with a tiny mouth and fringe of arms, and covering each bud with more material from the sea, and joining the buds together, makes the slender stems and branches, and gradually a whole tree. How the jelly animal grows little buds from its

branches, also,—its babies—which it sends out into the sea, and how when these are grown up, they too build their fairy trees. How thus whole fairy forests are built up, and when these little animals die, their empty homes together form whole beds or “reefs” and round “islands.” How on these the dazzling white sand collects, and palm trees and others which have floated out from the land take root and grow, and the sea-birds fly about under the blue sky, and lakes of blue water lie in the middle of the islands. Tell the child about the pretty pink coralline seaweed which grows in the pools and copies the real coral tree.

A Fish.—Let the child note its shape, its pretty shining bathing-suit of scaly skin, its peculiar arms or fins,—the little oars with which it swims; the slits in its side (gills), with which it breathes as the water plays over them, its round eyes and cold feel. Tell the child about the little flying-fish whose fins are spread out into little wings, whom the children see when they are going across the sea in ships; how these little fish, when they get lost in rough weather, sometimes fly on to the ships. Tell him about the different sea fish; hook and line-fishing, net-fishing, the fishing smacks and fleets.

Tell him about the fish who live in the rivers and ponds and streams. About the pugnacious little stickleback, with his shining crimson and silver bathing-suit and his prickles standing up on end; how he builds a little cemented barrel-shaped nest of grass and weeds, with a door at both ends, where the mother stickleback lays her eggs, while he watches outside and guards it. Tell him about the goldfish which came to us from China originally. Tell him about fly-fishing, and the history of the little caddis-fly whose grub baby the anglers use as bait to tempt the fish, because they are so fond of it. How this little grub makes himself a snug little tube home of spun silk, with bits of stick and stone woven into it, to protect himself. How he crawls about in it to feed and amuse himself. How, then, if he is not gobbled up by a hungry fish, he covers himself in and goes to sleep, and then wakes up with wings, and flies away in the air.

An Earth-worm.—Its function as a plough or garden-rake, its ringed body, absence of legs and eyes (since it does not need them underground), shiny skin and dead-leaf food. Its little trail on the damp ground, its work at night in turning over and improving the soil for the seeds and plants, and loosening it so that the raindrops may reach them, and they may spread out their growing roots.

A Fly.—Tell the child the fly has, like its cousins the daddy-long-legs and gnats, only one pair of wings—not two pairs, like the dragon-flies and butterflies and bees and beetles. How it hangs head downwards from the ceiling and crawls up the window-pane because it has little pads on its hairy feet which stick to these. How it sucks all kinds of food with a long sucking-tube. How the fly was born a naked, legless grub baby when the egg was hatched, which the mother fly laid in some out-of-the-way corner, in—since flies are not such nice clean little creatures as the butterflies, &c., and do not choose pretty nurseries to live and feed in—a dust-heap or an old vegetable we had thrown away, or some such place. How then the grub baby, when it had eaten and got very fat, went to sleep in a pupa cradle, and woke up with its grown-up wings and flew away. Tell the child how the gnat babies live in a

little boat cradle in the water until they learn to dive and swim and grow their wings, and have sharp little stabbing mouths, which is why they sting us as they hum past. Tell him about the dragon-fly (belonging to a different family), whose ugly grub babies live in the water, who are very greedy, and feed on all the little creatures they can find, as they swim about at the bottom of the stream or pond, carrying a little mask over their powerful jaws in which they seize their prey. Tell the child how, when they are grown up and have their long slender figures and beautiful wings, they fly away in the air. How they dart about very swiftly, chasing the butterflies and flies in the sunshine as they spy them with their big gleaming eyes, for they can reverse their wings and fly backwards without turning round, and are just as fierce and greedy in the air as in the water.

A Lady-bird or other Beetle.—Tell the child about the armour the beetles carry to protect their soft bodies, generally shining and often beautifully coloured. How it is formed by the horny sheaths of the front wings, and how they fly with their hind wings. How this armour is sometimes so heavy that if the beetle falls on his back he cannot get up again, unless he is a slender little click-beetle, who behaves like a Jack-in-the-box, jumping up and turning over and coming down on his feet with a click. Tell him the little wire-worms, which the gardeners find in the earth nibbling the roots of the plants and vegetables, are the mischievous babies of this little click-beetle. Tell the child how the flopping, buzzing cockchafer who flies in through the window at night lived for three years under the earth, nibbling the plant roots when he was a grub baby, for the mother beetles are very fond of laying their eggs hidden away in dark places. How he feasted till he got very fat, and then made himself a cradle, where he slept for some time, and then woke up with his wings and armour grown.

Tell the child how the grubs he finds in the nuts and apples and peas and mushrooms, and which the millers find in the grains of corn, are beetle babies, growing fat on their nice food, before they grow into little weevil beetles who carry little beaks on their heads or "snouts," which they use to bore holes with. How their mothers laid them there as eggs, knowing they would find plenty to eat. How when they have had enough to eat they eat their way out, the little nut-weevil baby leaving a tiny hole to warn us that he has eaten the nice nut food and only left us dust. Tell the child that while these beetles are so destructive, a great many beetles are very useful, like those who eat up old rubbish and dirt and clear it away, sometimes making it into balls and rolling it away and burying it, like the sacred Egyptian beetle. Tell him about the lady-bird, with her gay, spotted dress, who is so fond of the little green-fly that she eats them up in numbers, and therefore the plants they live on and the gardeners are very fond of her, but not the ants, whose cows the green-fly are. How she chooses her grub babies' nurseries on the plants, so that they too can feast on the green-fly. Tell him about the pretty fireflies, carrying their two bright lanterns on their shoulders; and the glow-worms in the warmer countries, who throw out their brilliant light in the dark.

A Butterfly.—Tell the child how it protects its soft body with little horny rings fastened into its coat; about its six little legs, and large

eyes, and its sensitive feelers. Tell him about its long honey-sucking tube, which it keeps coiled up (which may be drawn out with a pin from a dead butterfly), except when it thrusts it down into the flowers to sip their honey. About its two pairs of wings with their beautiful coloured scales, and how it folds them up when it rests on a flower, different to the way in which the moths drop theirs, downwards. Tell him about the butterfly's babyhood, and how it came to be a butterfly, and about its use to the flowers (see Chapter XIV.). Tell him about the moths and their many interesting little caterpillars—like the silk-worm and hairy "woolley bear," and those which hang by silky threads from the bushes, or live in the trunks of old trees, as do some beetle babies,—how they mostly fly out at night, and how they help the honeysuckle and the evening primrose and the white moon-lilies in the warmer countries, and other flowers—who coax them to come to them by their sweet scent—to make their little seeds. Let him note how beautifully coloured their lower wings often are in the different species.

Some Ants, and a Leaf with Green-fly.—Tell the child all about the ants—the little black garden ants, and the red ants—and their wonderful industry and social life. How the little workers, with their spades in their mouths, shovel and dig with their tiny legs, and build the galleried cities, and rafter the many rooms with grass blades and sticks and leaves, and even clear paths. How they go out in regular armies to meet their enemies or on foraging expeditions, planting sentinels on the way, bring home their food, and even store little plant-seeds in granaries for the winter. How they feed on the honey of the flowers, and honey-dew on the plants and the juices of little insects. How they keep cows—the green-fly, for their milk is honey-dew—and sometimes slaves. How the nurses care for the grub babies, laid as eggs by the Queen, squeezing food into their mouths, cleaning them, and carrying them up in their jaws to the sunshine.

Tell him about the "white ants" of the warmer countries, which belong to a different family though they behave much like the other ants. Whose kings and queens have silvery-white wings when flying in the air, but lose them when at work. Who often build their cities under the floors and in the woodwork of the houses, eating away the wood, or, as we say, "rotting" it. Whose cities out of doors are often hillocks sometimes much higher than a man; tell the child how these ant-heaps the South African travellers have sometimes found useful as ovens,—hollowing them out and lighting fires inside them.

Tell the child about the little green-fly on the leaves and stems of the plants, with their six tiny legs and tiny wings, who suck the plant juices and make the honey-dew for the ants, but who have such hundreds and hundreds of babies—who are born without wings—that they would kill the plants if we did not remove them, or if the lady-bird did not come to visit the plants and eat them up. Tell him about their useful little cousins in the warmer countries, the insect who gives us cochineal, and the little insect who gives us the red sealing-wax.

A Snail.—Tell the child about the snug house he builds himself, with his wonderful mantle (see under *Sea shells*), to live in, which he carries on his back when he crawls out and trails himself off to feed on the green stems and juicy plant leaves, the cabbages, and salads. About

his funny head with his two horns—his feelers—and his little eyes on stalks, which he looks all round his house with when he pokes his head out. How he makes a horny front-door, and shuts it up tightly when he goes to sleep for the winter, and until the sun shines warmly again.

A Frog.—His home on land and in water, his hoarse croaking, his webbed feet and long fly-catching tongue, how he likes not only flies but wire-worms, the click-beetle's babies ; the story of his origin from a speck of jelly in the pond, his tadpole existence and emergence from the water, when he learns to breathe through his mouth. His winter sleep.

A Rabbit.—His long ears and soft furry coat ; the warrens he and his friends burrow under the ground, where he has his own house, and the mother bunny builds a cosy grassy nest, and often lines it with her own soft fur for the babies. How the bunnies come out to play in the meadows, especially in the dusk, and scamper away, with their little white twinkling tails upturned, when they see any one. How they nibble their grass and plant food with their long front teeth, and like lettuces and carrots when they are tamed, and live in a little hutch.

A Chair.—The forest, the oak, walnut, and other trees, the wood-cutter, felling the trees, stripping off the boughs, the American lumber forests, floating the logs down the stream, the saw-mill, the timber, the carpenter's shop, the cabinet-maker's, and the ship-building yards.

A Cat.—Her claws, her pads, her rough tongue, her fur, her bath, her food, her language ; the lions and tigers all belonging to the same family.

A Glass of Water, or a Rain Shower.—Tell the child how the rain-drops come pelting down to wash the earth, and water it for the thirsty plants and to give him clear water to drink. How some of the rain-drops tumble into holes and form pools and ditches, and others sink down deep into the earth to spout up again as springs, and others flow along to make the rivers and streams. Tell him of the work of the Cold fairy, who makes the dew and rain and the snow. Tell him how the ground dries up after the rain, because the Heat fairy breaks up the raindrops with her fairy wand into tiny beads of water, carries them up on her light wings and scatters them, like puffs of silvery steam or "water dust," into the air. How then the Cold fairy catches this and makes it into clouds, or sometimes into the raindrops again, or sometimes into the dewdrops that spangle the grass in the evening and early morning. Tell the child all about the winter season, the winter rest of all things. When the flower seeds are sleeping, warmly wrapped up, and the baby leaves in their protecting cradles on the branches ; when the bears, and hedgehogs, and frogs, and snakes, and snails, and many insects go away to sleep till the warm sun comes out again, and when most of the birds fly away to winter in the warmer parts. When the Cold fairy and the glittering fairy and Jack Frost are busy making pretty pictures and plenty of fun. Tell the child about the winter sports, snow-balling and snow-building, skiing, tobogganing and skating ; the ice carnivals and the ice palaces of Russia and Canada. Tell him about the cold Northern regions, where it is always dark in winter, because the sun is never seen ; about the great floating icebergs, with their blue

and green tints. The little Eskimo children, their long skin boats, their huts, their dogs and sledges, their sealskin dresses and hoods; how the babies are carried in the mother's big hoods; their seal and fish food. The little Laplander children, who wander about and live in tents; the reindeer, who gives them milk and meat, and skins for their clothes, and draws their sledges.

A Bit of Ice, or some Snow.—Tell the child about the beautiful work of the glittering fairy who fashions the snow into starry snowflakes (show the child a snowflake under a magnifying-glass), and the powdery frost into shining crystal flowers; who helps to make the diamonds under the earth and many glittering jewels, and who even helps to make sugar and sugar-candy for him. Tell him about the work of Jack Frost, who draws pretty patterns on the window-pane, and unkindly nips the plants when they are in too much of a hurry to grow, and sometimes packs the frost crystals and snowflakes tightly together, and, reigning as Ice King, imprisons the evergreen leaves and branches (for he loves making pretty pictures), and the water in the ponds and pipes, till the Heat fairy comes to set them free.

The Sun.—Tell the child about the sun's work while he seems to move across the sky, and how to "tell the time" by his position in the sky. About the wonderful work of the fairies he sends down. The Sunbeam fairy and her children, the Heat fairy who helps to make the clouds and makes the kettle boil, and who is so clever she can get through the window glass, and through the earth to warm the baby-seeds; and the Light fairy who creeps in to kiss sleepy eyes and wake him up, and with her sister the Heat fairy dances out from the burning coals in the nursery grate and from the candles and lamps. Tell him of the beautiful work of the Sunbeam fairy (see Chapter XIV.), who paints the rainbow and the flowers and fruits, the butterflies and dragon-flies. Show him a ray of light passing through a prism, or the sun shining through cut-glass, producing a miniature rainbow. Set a piece of paper on fire by holding a lens between the sun and paper, showing the heat of the sun. Tell the child how the sun never goes to bed, and of his work when he seems to.

The Wind Rustling the Leaves.—Tell the child about the great sea of air all round him, which gives him, like all the plants and animals, sweet breath to breathe; which brings him all the sounds he hears, and the scents of the flowers; and in which the birds and bees and butterflies swim along. Tell him about its children the breezes and winds, which are always blowing about over the earth, singing many different songs as they go, which cool the air and fan his cheeks; which chase the little clouds away from home and back again to meet their friends; and which play with the leaves. How they help many of the flowers, especially those of the trees and grasses, which have no pretty wings or scents,—to make their little seeds by bringing them pollen; and so no wonder the hazel trees toss their tasselled catkins so merrily in the wind, and the corn and other grasses bow their feathery heads before the breezes as they come along. How they carry the seed-babies or cradles of the thistles and dandelions and many other plants away from home to find a nice place to grow in. How they send the sailing ships along, and drive the windmills round.

Geography.—The little geographical stories referred to in Chapter XIII. may be illustrated by pictures, and demonstrated by the box of sand and a globe of the world. With the sand spread out on a large tin tray and moistened with water, leafy twigs, the child's bricks, Noah's ark figures and soldiers, scissors and paper for cutting out figures and implements, shells and seaweeds, and dishes of water, we can make the first teaching of geography as interesting as it is instructive to the child. We can give him the idea of the natural surface of the earth and the arrangement of land and water by showing him how to make for himself mountains and hills and valleys, capes, forests, rivers running into the big sea, with towns on their banks; bays and gulfs and islands. In telling the stories of the different countries, the mother will point out on the globe where they lie and draw him rough maps in the sand. She will tell the child simply, facts within his comprehension about the natural and manufactured products of each, the flowers and fruits and animals, and will tell him stories of the children who live there. She will tell him one day about Switzerland, another about Holland, another about South Africa, or India, or Lapland, or Canada, about London, or an English county; places she has been to, &c. She will illustrate the stories by frequent reference to any pictures available, and show him how to represent in the sand-pile the dwellings and surroundings of the various peoples in far-off lands, and this will form an enthralling occupation for the child. He will make in his sand-pile the Sahara, with its green and watered oases, and caravans; the tangled Indian jungle, with its wild inhabitants; the swampy, reedy rice-fields; the Bay of Naples and Vesuvius; the Eskimo's hut and environment; the Kaffir kraal, with its huts and the mealie fields, the great ant-heaps, the bush and veld and ox-wagon treks; the snowy Swiss mountains and lakes. The mother, who is always inventive, will find plenty of simple materials at hand with which to supply realistic touches where such are necessary.

Useful books for the mother to refresh her own memory will be the "Geographical Readers," I., II., and III., of the Pestalozzi Series (O. Newman, Regent St., W.), or the "Oxford Elementary Geographics," I., II., and III. (Clarendon Press, London), and the following books contain many charming little stories for reading to the child:—

Andrews' "Seven Little Sisters who Live on the Round Ball that

Floats in the Air," and "Each and All: a Sequel"; Chance's "Little Folks of Many Lands" (Ginn & Co., London).

Laurence's "Little Folks of Other Lands" (Blackie & Sons, London).

"My Very First Little Book of Other Countries" (Henry Frowde, London).

History.—The mother may tell the child little stories of leading events and personalities in history, and, remembering that history calls for a good deal of imagination, and the child must live as far as possible in the times, as in the climes, he hears of, these little stories should be as far as possible illustrated by pictures and representations in the sand-pile, and accessories (see above), and they may be to a great extent combined with the geography lessons. The child should be troubled not at all with dates, and little with "reigns," names, or less significant details; and it is very advisable to let him spend a little time over the life of one great historical figure, or the people and events of one special period, and come to know this well, and therefore remember it, before passing to the next. The contemporary history of other nations should not be forgotten, nor mythology, which affords rich copy for stories.

The old-fashioned but charming "Little Arthur's England" (Murray, London), or Creighton's "First History of England" and "Stories from English History" (Longmans, Green & Co., London) will be useful aids to the mother.

And for reading to the child the following:—

Major Ward's "Little Barney's First Peeps into English History" (O. Newman & Co., Regent St., W.).

Blaisdell's "Short Stories from English History" (Ginn & Co., London).

"My Very First Little History Book" (Henry Frowde, London).

In the course of the Bible stories the child may reconstruct many of the scenes and journeyings in the life of Jesus. Bethlehem, with its neighbouring fields and sheepfolds, the inn and the caravan-serai, with the cattle and manger. The valley and "garland of hills" surrounding the little town of Nazareth on its hill, with its olive groves, fig-trees, palms and vines, its springs and wells, and the carpenter's shop. Jerusalem with its city walls and low flat Eastern houses, the great temple with its "splendid adornments," its courts and flights of steps. The Mount of Olives; the Lake

of Galilee with its fishermen, fishing-boats and nets. The river Jordan losing itself in the Dead Sea, with the overhanging mountains and flat dreary shores of the latter. The mother will find perhaps useful suggestions for this teaching in Steedman's "Child's Life of Jesus" (Jack, London) or Tynan's "The Story of Our Lord for Children" (Sealy, Bryers & Walker, Dublin).

Arithmetic.—Very little arithmetic should be taught at this age. The clock, which has long interested the child, since the time when he first asked "What it was saying" and learnt its association with "Dickory-dickory-dock," and which he has found to regulate most of his life, to give him

"A time to wash, and a time to eat,
A time to play, and a time to sleep,"

he will now learn to read for himself. There is a story told by Professor Sully of a child who invented a clock for himself by using a dinner-plate for the face, a knife and fork for the hands, and peach-stones set round it for the hours, whose method we might well adopt for this teaching. He may learn to make his Roman numbers with his cubes and to print his numbers on the black-board, and do simple addition and subtraction with oranges and buttons, and matches, and the stringing and unstringing of beads, in twos and threes and fours; and later, multiplication and division, with rows of these, divided into groups of different numbers.

The value of money he may learn through his games of "shop" with cardboard coins, and he will take some pride in learning when playing at "shop" to measure with an inch tape, inches and feet, and to weigh ounces and pounds with the kitchen scales.

Writing.—The letter-games and alphabet picture-books after the fourth year will have formed a good beginning for writing and reading, in that they will have taught the child to name and recognise his alphabetical letters, and to form simple word combinations through the easy and informal medium of play.

A small "composition blackboard" (which can be procured from any large stationer's) and chalks are a most essential and valuable accessory in the teaching of writing, since all that the child studies, with his eye as yet untrained and unused to detail, must be bold and large and clear; and since he only slowly learns his control over the delicate finger muscles, the first letters that he forms must be the

opposite of cramped and small, and are hence best made with chalks. We shall teach him at first to print his letters with large free outlines on the blackboard, and after this to form the strokes and pot-hooks and hangers of ordinary penmanship, and this we shall keep him to for several months. The chalk must be held at its end opposite the writing point, with the thumb and first and second fingers.

After this we may give him a pencil, preferably one which is sharpened by unwinding the paper, and paper, to write at a table, and later, suitable copy-books. "Vertical script" must be adopted—that is, more or less straight up and down writing, not sloping. The latter was taught in the past almost universally until about 1894, because we did not realise its harmfulness to the child's eye and muscular system generally. The straight upright hand is the natural way of writing, and the one that the child adopts if left to itself. The sloping, slanting style is utterly unscientific; it has to be laboriously acquired, involves an unnatural twist of the hand, twist of the eyes, causing more or less eye-strain, and a twisted position of the spine which tends to curvature. *Straight* should be the key-note to the child's mode of writing, and attention to the following points is of great importance. The child should sit straight and face his table squarely, with his elbows well to his side. His paper must be straight in front of him, and the greatest care must be given to the way his pencil is held. Instead of the first finger lying along the length of the pencil (or later pen-holder), the pencil must be held more perpendicularly, and the inside of the palm of the hand must be seen. The point of the pencil (or nib) should be about one and a half inches from the tip of the second finger, the hand must be supported on the little finger, and the tip opposite to the point, or nib, should point outside the line of the arm. A decided caution is necessary to prevent the slipping of the child's writing *backwards*, which will occur if he does not sit properly and hold his pencil correctly.

When, later, a pen is given to the child, a fine scratchy nib must be avoided, and while a thick "J" is undesirable, the point should be broad, firm, and elongated. All copy-books used must be modelled on the "vertical style" of writing. Slates should never be used, since the small advantage they possess in allowing of quick rubbing out is entirely outweighed by the eye-strain which the too

faintly coloured outlines of the slate-pencil on the slate produces. No writing or reading should be done by the child by artificial light, and a quarter of an hour is quite long enough for a single lesson.

Reading.—Reading is usually first taught in school by one of two methods, either by the old-fashioned and laborious “Alphabetical” style, which is entirely to be condemned, or by the “Phonetic” style, which is much better though not entirely satisfactory. By the Alphabetical method the child only learns the *names* of letters, and when he can name them at sight, syllables, and then one-syllabled words, such as “cat”; and in reading by this method he has to get the *sounds* as best he can. This style is particularly uninteresting to the child, since there is nothing in a letter to awaken his curiosity; it is only a symbol, not an object. It is further unscientific and unnatural, since no child learns to talk by learning his letters first, and reading is only “printing talking.”

In the Phonetic method, which is more often used nowadays, the child learns the *sound*, not the *name*, of the letter, &c., and when he looks at a letter will pronounce this. These two methods are used at school chiefly because children there have to be dealt with in numbers and not singly. It is said to be advisable to know something of each method of teaching reading, but the ideal method is that of the “Sentence or Word Method.” This is based upon the fact that the child thinks in sentences and words, not in letters or separate sounds; that when he is six years old and begins to learn to read he has already evolved a vocabulary which he has obtained through his ear, and which he understands and can use pretty freely. Our object now in view must be to convert this ear vocabulary into an eye vocabulary—that is, to let the child come to *recognise* in *print* the meaning which he recognises when he *hears* the words and sentences spoken, or uses them himself in speaking.

This method of teaching requires to be combined with object lessons and with writing lessons—that is to say, practically all three are taught together in one and the same little lesson. As far as possible, the child's own ideas suggested by an object should form the sentences we use. It will perhaps be best to explain this method by giving an illustration recommended by an American authority of the method of such a little lesson.

The mother is sitting at a low table with various objects, such

as foods, toys, pets, and pictures upon it, and a little blackboard and chalks, the child beside her. She asks the child a question, "What grows on trees?" The child may answer "Apples." The mother then holds up an apple and asks, "What colour is it?" The child says, "Red." "What shape is it?" "Round." "What do we do with apples?" "Eat them." And with a little more discussion the mother obtains the answers, "Peel them; cook them; make tarts." She then writes large and clear on the blackboard a sentence which includes the child's own statements. She then reads the sentence to the child pointing to each word, and then quickly tells the child to read each word, *pointing all the time*. She then makes the child write the sentence on the blackboard. During the next lesson on the next day she writes the same sentence on the board and makes him read it, and also calls forth and writes fresh sentences, as far as possible bringing in the same words over and over again about fresh objects or pictures.

To quote another sentence illustrating the method: "The cat can mew, drink milk, eat fish, purr, wash her fur, catch mice."

Thus the child learns to recognise with his eye something he is interested in, and has heard before and knows the meaning of. He soon gets to know a large number of words, and learns much more evenly the more difficult and easy words, and with far less effort than by any other method. He will not get into the habit of drawling and stopping to read over words so common with children who are learning to read; and at the end of the year he will be able to pronounce all the simpler and more familiar words which he uses in talking clearly and unhesitatingly.

He will now be ready for the use of simple readers, which should not be given to him earlier. Previous to this time the best reading-book for the child after his first few reading lessons is a number of sheets of paper on which the mother writes daily in a large printed hand the sentences which are being used on the blackboard. These, clipped together, should be given to the child as he goes on, to read in review, as new work is proceeded with. He picks up at the same time the beginnings of spelling by getting his eye accustomed to the forms of words—the best way of learning it, since English spelling can be learnt only through the eye. The child at the same time should be encouraged to model and draw the object used at the lesson.

Languages.—Childhood is essentially the time for learning foreign languages—in the first and most natural way, through its ear alone. For this reason some parents have preferred foreigners as nurses for their children, and since the child's first acquaintance with his mother tongue should not be obtained from those who use it imperfectly, such attendants are, I think, very preferable to English servants of a low class.

The child, in any case, will best and most easily learn French and German at this age, and should take its lessons in these through the medium of ordinary companionship in its play and conversation with a French or German governess, and here several mothers may sometimes combine and engage a governess for the purpose.

The "First French Game" ("Petits Mots pour petites Bouches") (from O. Newman, Regent Street, London) is a useful aid to teaching the little child French.

PART V
THE SCHOOL AGE

CHAPTER XVI

THE CARE OF THE SCHOOL CHILD

"Only the best is good enough for the child."

General Considerations of the School Period.—The mother whose child is about to enter, let us say at the age of eight years, upon systematic school life, has many important things to consider and weigh. The child has left his first childhood, and is entering upon a new era with its own special considerations, needs, and risks. The several points concerning the child's education, physical and mental, its kind, its methods, its time and place will all occupy the mother's attention and imply good judgment and concise, well-informed views, but she must not forget the first and underlying consideration of health. This is the first essential to all education, and therefore throughout the school period the realisation of a physical ideal for her child must have the first place in her mind, for no education of mind or body can be successful unless the health is perfect. To ensure this the mother must realise first of all the risks of the school age considered apart from school, and then the possible risks which may meet the child through school education itself; and she must also know and apply the essential rules which must govern the home care of the child, and meet his needs at this age quite apart from school.

The Risks of the School Age.—It is important for the mother to realise that the school age is itself a time of strain, because the child's constitution and nervous system have to meet the demand both of rapid general development and also the special and important growth of the sexual organs, which takes place in the latter half of this period.

There is a strain on the child's nervous system involved in adapting himself for the first time to the inevitable set rules, from early morning till late afternoon, which belong to school life. At

no time in later life, nor certainly before this age, do we have to live so completely by rule and up to time, and though we may almost prevent the strain becoming felt by suitably regulating the child's life—not only ensuring him sound health and vigour and uninterrupted quiet for his home work, but giving him *variety* in work and recreation, and all possible scope for development of individual faculties and powers and the greater pleasure in work which this means—we must not forget that this strain exists.

The school age, too, is, partly from the great intermixing and contact with other children, the age during which the child is most liable to infectious diseases.

The Risks of School Education itself.—These lie chiefly in overpressure, especially in excessive home-work, or overstrain in physical culture and games. Both these risks may operate in healthy children if either the mental or physical culture is not regulated on lines indicated by the child's own stage of development and according to his needs, but they will operate far more certainly if the child is not healthy in any one direction. A poor nutrition, or faulty digestion, or an unstable nervous system will tend to over-strain and break down under school work; and any defect of sight will result, when the eyes are now so much used for the first time, in eye-strain, which often seriously affects the general health. A heart or lungs in any degree unsound or a feeble spine will suffer from the strain of school games and organised physical culture. Hence we can see that to meet the demands of school education the child must have a good nutrition and perfect digestion; a healthy nervous system; a good circulation; a well-developed chest and capacious lungs, and good, efficient breathing; well-toned muscles and sound eyesight and hearing. All these the child must have *initially*, not only if its education is not to be fraught with risks, but if its brain work is to be productive. And to maintain them the home hygiene of diet and sleep and clothing and bathing, and the special understanding and care of those bodily functions of breathing and sight and teeth and bowels, and the influence of altitude and climate will all need to come under the notice of the mother and to receive her constant attention. “There is nothing in the legitimate field of intellectual activities that need deteriorate physical health. Remove the incentives to cram and over-tension, give the school children pure air, freedom of movement, good food and plenty of sleep,

vitalise their work by living interest, and it is remarkable how much mental activity the brain will sustain.”¹

The State, which has long appreciated the importance of ensuring the efficient sanitation, ventilation, and so forth, of its school-child's environment, and which controls through its sanitary authorities the fresh-air supply and impure air removal, the drains, closets, and suitable temperature in the Government Schools, has in England recently decreed that every child it educates shall be medically examined as to the state of its health and fitness for school. To the parents of the upper classes, who bear their own responsibility in the education of their children, belongs the duty of ensuring a medical certificate of fitness, realising that “it is not enough that a child should appear to be fit, but it is essential that he should be proved to be so”; as also his suitable home hygiene.

To the school authorities in these cases belong finally the school hygiene and the detailed scheme of the child's education, but there are several important points, such as the choice of the school, the essentials of its curriculum, its use of physical culture, of punishment, and the home-work set and required, which may well engage the attention and which require the direction of the parents. In the case of boarding schools, when selecting such, the dietaries allowed and the hours of sleep should be especially and personally investigated by the mother. And in the case of girls, special arrangements should be made with the head-mistress whereby those essentials mentioned on p. 495 will be ensured.

Boarding and Day Schools.—Social and economic considerations and conditions of residence will chiefly determine whether the child goes to a day or boarding school, and in these days of Empire-building the boarding school finds a large place. There seems little doubt that a boy benefits by residence at one of those Public Schools of which England is so proud, and that socially and morally it is worth much to him in after life to be an old Public School boy. And even if there is any truth in Spencer's argument, that the element of “brute force” and of “despotic methods of government” exists too much there, the right home influences and ideals may do much to soften and to counteract these; and the games, organisation, and physical culture, and the pervading esprit

¹ Preston W. Search, “An Ideal School.”

de corps give the boy not only safe outlet for his developing physical energies but valuable training in courage and self-reliance, and in those virtues which teach him to live as an English gentleman. Also the large schools form the best entrance to the universities, professions, Woolwich, Sandhurst, and the Indian and Home Civil Services.

In regard to preparatory boarding schools the disadvantages of these for young boys most emphatically outweigh any benefits gained. A boy during the critical years from seven to thirteen essentially needs a home care, and nothing else can take its place. Here the boarding school undoubtedly "trespasses on the life of the home," and means the child's infinite loss as well as his parents'; for the child who spends the greater part of his youth away from home can never know the meaning of the word, nor can his parents hope for the continuance of their influence, since the essential relation of sympathy is impossible under these circumstances. The opening years of school life, when the child first adopts a life of routine and exchanges the home circle for a community of strangers, are full of risks which only the mother's care, based on the watchfulness of love and of knowledge of the child, can guard him against. The all-important early training, which must depend upon an intimate understanding of the child, and the softening influence of the mother, and the little home circle, can never be entrusted to the best boarding-school master. This is still the time for the formation of character, of physical habits and ideas of life and of ideals—"the first soul-impressions"; and no mother with her eyes open will, I think, hand over her task to a stranger. It is a different matter when the boy reaches nearly Public School age, when, if his home training has been as perfect as it well may be, he can be sent out into the sterner atmosphere of the larger community—for school is a small world—with advantage to himself to develop those essential characteristics which in the sheltered home life he may miss. It is very advisable then for him, at the age of thirteen, to go to the Junior school, which prepares for the Public School he intends to enter, for a year's preparation and training for the larger school.

The boarding school would seem to possess none of the distinct advantages for the girl which it offers to the boy, but the sacrifice incidental to Imperial expansion in the Colonies, more

especially in country districts, and other varying circumstances which do not obtain in England, often decide the question for us, and leave little to be said. Day schools, *wherever possible*, are, I think, the schools of election for girls. Few parents will refuse to admit that a girl has the right to as complete and thorough a school education as a boy, and the more similar it is to a boy's the better for her—and here co-educational day schools would seem to be right in principle—but the home care and influence are very essential to the girl, and must be prolonged through all the crucial years of her dawning womanhood. She will during these be more likely to suffer from over-pressure than the boy, and her larger education and training, like her physical culture, must be essentially different just because she is a woman.

One may say of co-education, which in all branches of higher education should undoubtedly obtain, that in America, where for generations girls and boys have been taught in the same schools and under the same instructors, the United States Government have pronounced it to be an "unqualified success." Its supporters there and in England, where such schools exist and flourish, contend that girls seem to gain in those qualities in which they are said to be deficient, namely, in courage, candour, common sense, and resource, and that the boys gain in gentleness, chivalry, and purity. It would seem to be a more natural thing in day-school education not to separate boys and girls, who must live and work together as men and women, or to rob them of the undoubted benefits of common work and companionship, and the only practical difficulty seems to be that physical culture and games must necessarily be differently organised for girls and boys.

In the day schools for both perhaps the main essentials in choosing should lie in the ensurance of a curriculum in accordance with modern requirements; one which includes a sufficiently complete scientific equipment, and the practical teaching of modern languages rather than the purely classical, though these, of course, have their own value. A due provision for the teaching not only of mathematics, but of geography and of the history of the world, especially in its bearing on modern international relations and Imperial questions, all so useful, even essential, in later commercial and social life; and for the teaching of the mother tongue as exemplified in our rich and varied literature, for its culture and appeal to the higher life of

the child. And one must not forget the school's facilities and scope for outdoor exercise.

The choice of the head-master or mistress should be a question of first importance, since he or she is the autocrat absolute. In him or her one must look for breadth, sympathy, the power of awakening enthusiasm as well as academic qualification, for "true education is practicable only by a true philosopher."¹

Physical Culture.—A due amount of muscular exercise is essential to the well-being of the child. The little child obtained this through his natural play and innate incessant activity. The older child in the school rush and larger business of life is apt to forget it and not find time for it. But it is necessary for the preservation of health and promotion of mental vigour. It improves and quickens the circulation of the blood, it necessitates full, deep breathing, and ensures adequate chest expansion, and the filling of the lungs with the oxygen they need. It encourages digestion and prevents constipation, increases mental activity, and produces the most healthy tiredness and refreshing sleep.

It also maintains the muscles themselves in good tone; and hence makes firm flesh rather than flabby soft tissues, and it lends grace and agility to all the child's movements. But while we recognise the importance of physical culture, we are too liable to forget the dangers of excess; the essential fitness of heart and lungs, which must precede any systematised physical training, and the necessary difference between that of the boy and the girl. It is very wise and necessary to control the physical exercise undertaken by the child at school, and the parents' own knowledge of the child's constitution is well aided by medical advice; great injury may be done by gymnastics and hard, competitive play to growing children and young girls. The danger of heart-strain is a very real one in Johannesburg; and Dr. E. P. Baumann there, who has specially investigated this question, has uttered a strong warning, based on his examination of a number of school children, of whom he found that more than half had enlarged hearts, against any attempt to regulate physical culture and games at that altitude on ordinary English lines. And even in England hard competitive play and long runs demand that the boy's constitution and heart should be ensured to be sound.

¹ Herbert Spencer, "Education."

Exercise for Girls.—There is an undoubted tendency nowadays to attach undue importance to the cultivation of mere muscle, especially in the case of girls. Perhaps it is merely an error of transition from the days of our grandmothers—of which we still see relics in the long queue or “crocodile” of girls exercised (?) under supervision—when stately deportment was the all-important essential, and any desire for liberty of speech or action, any freedom of movement and healthy natural exercise, were incompatible with good breeding, to those better days which Herbert Spencer indicated to us. He did not, however, I think, prescribe excess in hockey and gymnastics, “hard beds and cold water all the year round,” and the athletic craze, which touches and exhausts many girls to-day and must unfit them for the higher functions of an ideal womanhood. There is a physical even more than a mental difference between the girl’s muscular training and the boy’s which, if she may neglect with impunity in her later life, she cannot during the years of her puberty, say from twelve to sixteen. Her special physiological functions, for which her essential woman’s organs are during this period preparing, and her greater susceptibility to fatigue and over-strain must be preponderating factors in the scheme of her physical culture. What she needs is rather suppleness than bulk of muscle, the strengthening to keep them in healthy tone of the muscles of her spine, abdomen, and limbs, lightness of movement and a graceful carriage. I think that during this period *organised school or institution gymnastics should be entirely avoided*, for the horizontal and parallel bars, and vaulting especially, all involve more or less strain and undesirable jars and twists. A home “gymnasium” fitted with rings, &c., and a rack, is, however, much to be recommended. The girl will get the necessary culture from daily drill of not more than a quarter of an hour at a time, with and without Indian clubs and dumb-bells and wands—the dumb-bells should not weigh more than from one to two pounds at most, and wooden ones serve the purpose well—and a Whiteley Exerciser is very useful. Drilling, like the swinging on rings of the garden gymnasium, is pleasant and beneficial out of doors, but a strong caution is necessary against doing it in the hot sun; when cool and shade is not obtainable, it should be carried on indoors. *Skipping* is much to be recommended for the prevention of spinal deformities, and others, such as flat-foot. *Ball games*

(see Chapter XIII.) are useful for the acquisition of grace and ease of movement.

Hockey is, I think, well described as a "rough and fast game, and one which requires sound wind and limb," and though I have yet to meet the real so-called "hockey hoydens," it does not seem to me a suitable game nor one likely to further dignity and womanly grace. In short, it would seem that competitive field games, which so easily lead to over-exertion and over-zeal, are less suitable for girls than for boys, and are unlikely to conduce to such a womanhood as we should wish for our girls, and certainly to the efficient performance of the functions of maternity.

Walking and *tennis* and *golf* are the ideal forms of outdoor exercise for the girl. Golf links and subscriptions are within the reach of most of us, and the game provides walking exercise with an object and interest. Tennis gives agility of movement and training of eye and hand, and badminton is a useful indoor winter game. *Swimming*, apart from its humanistic value, is, if not the best, certainly one of the healthiest exercises to be recommended, not only on account of the symmetry of chest and shoulder muscles that it tends to develop, but also because of its excellent effect on the organs of the chest, whereby it especially tends towards the prevention of consumption. In winter in those Colonies, such as the highlands of the Transvaal, where the sun is hot during the day, swimming baths should be warmed, since the difference in temperature between the hot air and cold water causes too great a shock to the system, and is fraught with risk of dangerous chill to the bather. Boys, when overheated after games, &c., should be cautioned as to the necessity for cooling down or taking a warm or tepid plunge before a swim.

Bicycling, under strictly suitable conditions of road and weather and adjustment of machine, has its place, and while it develops only the leg muscles, it helps to prevent flat foot (see p. 388) and is a useful means of obtaining fresh air and amusement. As a recreation the suitable conditions are likely to be ensured; otherwise, used as a convenient daily means of locomotion, strong winds, hilly roads, and unsuitable times too often mean, especially at high altitudes, the risk of strain both of heart and internal organs, and of over-fatigue. The gear should not be high, and the saddle broad and unpeaked, and stiff hills should be walked.

Parents and teachers should prevent the carrying of heavy bundles and bags of books to and from school. The spectacle is all too common of a child thus weighted, on foot or bicycle, and not only is fatigue increased, but the spine cannot but be harmfully strained under such circumstances.

Horse-riding is, I think, an invaluable exercise for girls where such can be obtained. It should be begun early, about the eighth year, and will tend to produce not only good carriage but good nerve.

Skating when within reach will encourage good carriage, and *rowing* is an excellent exercise for chest expansion; and *archery* would afford good training in pleasant fresh air surroundings for eye and hand.

Fencing, taught if possible by a first-rate master, or at one of the *salles d'armes*, develops without any strain, agility, grace, and alertness of both eye and hand and mind, better than any other physical training which a girl can take up; and it is *very advisable* to include this in the physical culture of every girl.

Exercise for Boys.—The boy's many school games are too well known to need enumeration. The value of fencing for its training in agility of eye and hand and mental alertness cannot be over-estimated, as also the value of cadet corps exercise. Boxing is useful from an early age for its inculcation of courage and manliness. Football should not be attempted as organised play before the Public School age, and then only with caution at high altitudes, where also long distance runs are unsuitable even for healthy boys.

Quoits, though it will not take the place of the above-mentioned exercises, may be suggested as a garden or indoor pastime, and will teach the girl especially to throw straight and steadily, and to measure distances with her eye.

The mother should in all suitable weather ensure her children at least two hours of genuine muscular exercise daily out of doors, in the form of *brisk* walking or some outdoor game. In unsuitable weather this exercise, especially such as involves running, jumping, and throwing, should, if by any means possible, be ensured indoors. Younger children will usually initiate plenty of it for themselves, if they are given the necessary space and allowed freedom in a room set apart for the purpose to romp and shout to their hearts' content. "Military" musical drill with or without action songs

(see Chapter XIII.) will afford much scope for muscular exercise; and bats and shuttlecocks, and skipping ropes, like "reins" for outdoor use, should always be included among their playthings. The older children may very advisably possess a supply of light and inexpensive rackets and tennis balls, since this allows of many ball games; and of impromptu games of bat and ball, not scientific, but invaluable for the exercise of muscles, eye, and hand, which they admit of out of doors, or indoors in bad weather. The nursery or other room may be cleared and a rope or net stretched across its centre for the purpose. Such a room may often be similarly cleared for impromptu dancing; and other ways and means will occur to mothers who realise the importance of muscular exercise, and of making the most of the time the children have for such, during the school age.

School Hours.—Lessons should be short, and the morning should commence with those subjects, such as mathematics, which involve most mental strain. A continuous morning session, lasting until 1.30 or 2 o'clock, which is not at all uncommon in certain of the Colonies, even with a short recess, must be strongly condemned, on the grounds that the child goes too long without his midday meal, which on all counts must be his principal meal, and which he should sit down to not later than 1.30 and not be hurried over.

He should be prevented from rushing off to school after a poor breakfast, which is perhaps more common in the case of girls than of boys. The child's breakfast should be a substantial one, and a very light mid-morning lunch should be provided by the parents or the school authorities.

Home-work.—Home-work should never under any circumstances be given to the child under ten years of age, and after that should never occupy more than a couple of hours at most. It is liable to great abuse in day-school education, and usually occupies the greater part of a long evening—a much greater length of time usually than the school authorities realise, who would be the first to discountenance it if they did. The child needs some time for the enjoyment of his own individual life, his hobbies, and his home duties and interests. While we include so many subjects in the school curriculum, make no allowance for individual capacity in so wide a range of mental exercises, and insist that each child

should be judged by a uniform standard, an excessive amount of home-work would seem to be inevitable; but, taken with the school hours, it means that the child works far too many hours in the day compatible with good health, especially of the nervous system, and the best brain-exercise. "If education is to be true to its mission it will comprehend the whole man, and if it is ever to lift him to high results it must take time to build its foundations well;"¹ or, as so well and practically put by Colonel Parker, we must "Remember that the whole boy goes to school"; and if we have the right conception of education we shall know that "the child's work must never become a mental toil."

The examination system also is largely responsible for the excessive amount of time spent in home-work. Examinations seem to be an evil necessity. But while tradition has made them indispensable as a means of testing the child's knowledge and of placing it rightly in its form, and as the portal to the various branches of higher education, they can never be so true a test of the child's capabilities, or application, as a careful record of the work it has done, which takes into account individual effort rather than achievement judged by a universal standard. When we make practicable a more ideal system of education, and remember, as Spencer (whose work on "Education" should be known and studied by all parents) says, that "after all, the child has to learn the art of applying knowledge," perhaps our ambitions for our children will be directed less towards the uniform acquisition of routine knowledge as such than towards greater scope for development of individuality and all the child's faculties and powers. This does not imply specialisation, for which school education has no place, but an education which aims primarily at such a cultivation of all the child's powers as will develop his intellect, and thus prepare him for his life and all its problems whatever it be, and to live it fully. Instruction must play a part, for the child must be taught to use the tools which will prove useful to him, and to know the natural laws which govern his environment as well as the past history and experience of the race; but the first and all-important object of education will be the development of all his aptitudes—the widening and strengthening of his mental capacity, without which the knowledge of others will be of little value to him.

¹ Preston W. Search, "An Ideal School."

It is very essential that children should be given a quiet room *to themselves* in which to do their home lessons. Such a study should be well ventilated, warm, and should possess the necessary fittings. It is impossible for them to settle down and work productively in a general sitting-room and in the company of others differently occupied, and mental strain is greatly increased if this is attempted. The evening meal should be an early one, so that the children do not begin work until after at least half-an-hour has elapsed ; and lessons should cease at least an hour before bed-time, and should *never be continued right up to bed-time*.

School Attendance.—This must not become a fetish either with parents or school authorities. There are certain days in the actively growing period of school life when the child's health must precede any considerations of educational loss, and while it may be wise for the teacher to ascertain the cause of irregularity, and for the mother to appreciate and guard against the child's not unnatural inclination to create a holiday for himself, the wise teacher will readily co-operate with the parent in accepting such leave of absence in the wider interests of the child.

Co-operation and sympathy between teacher and parent is very desirable and essential, but it must rest upon clearly defined principles as to the rights and duties of each ; and those parents who desire the best for their children will never be strangers to those to whom they entrust the instruction of their children. A little natural friendliness and intercourse, which very simple hospitality opens the way for, between mothers and the teachers of their girls and boys, would often ensure a better understanding of the needs and difficulties of the children, and of the mother's wishes and ideals for them, and would not a little lessen the sometimes not too easy and encouraging task of the teacher.

Altitude and Climate.—Children at high altitudes are said on the whole to enjoy an immunity to diseases which those living at a lower level suffer from, and to have more bodily vigour. This is a common general statement, and apt to make one forget what for those who live at such altitudes it is most important to remember, namely, that a high altitude itself will tend to produce heart strain, nervous strain, and anæmia ; also that the high winds will raise dust—a happy hunting-ground for microbes—which inhaled conduce to diseases of the lungs. But while a lower and more medium altitude

may be preferable, a low-lying district is unhealthy and relaxing for growing children.¹

In regard to climate, we have to remember that while a warm dry climate allows of more outdoor and fresh-air existence than is possible where cold and damp weather prevail, the hot weather tends to cause a sluggish and inactive liver, and exhaustion will show itself more quickly in lessons and play.

The marked and sudden changes of temperature in our Colonies between the day and night will, unless guarded against, easily conduce to chill. Children should wear silk and wool or light woollen garments next the skin at all times, and warm night-suits, and should be provided with extra clothing to meet the chilliness of the air as the hot sun wanes in the later afternoon.

The heat, not only of the Colonial summer, but that due to the greater strength of the sun all the year round, with its deteriorating effect upon food, especially milk, will threaten children with many attacks of illness, if extra precautions are not taken in the management of all foods for children.

Corporal Punishment.—This in a well-disciplined school should never be necessary, and when parents are satisfied that it is a relic of a cruder age they will never permit it. In the words of Dean Farrar, "The more you punish, the worse master you are; a perfect master would probably never punish at all;" and to quote a modern author:² "Only when men realise that whipping a child belongs to the same low stage of civilisation as beating a wife or a servant, or as the corporal punishment of soldiers or criminals, will the first real preparation begin of the material from which perhaps, later, an educator may be formed." The principle is wrong, and against this parents must co-operate and fight resolutely until public opinion generally refuses to tolerate it. We shall do well to let the boy learn through the medium of his gymnastics, sports, and competitive games to endure, but cannot hope to teach him the lessons of morality through the loss of his self-respect, or by an object-lesson

¹ The suitability of the site and soil should also be a question for investigation in regard to dwelling-houses; and for information regarding this such a popular handbook as Paul Hasluck's "Sanitary Construction in Building" (2s.; Cassell & Co., London), which also covers ventilation, may be suggested; and for the question of drainage, his companion volume, "Sanitary Convenience and Drainage."

² E. Key, "The Century of the Child."

in the infliction of pain, even though he might choose such punishment in preference to others less speedily terminated. The inefficacy of such punishment is not difficult to prove, and here I would ask those "fathers" who can cast their memories back to their own school-days, whether it ever increased their respect and admiration for those who administered it, or whether it ever convinced them of wrong-doing or inspired remorse or a desire to do right. For, while to some sensitive children its infliction spells torture, by a number it is treated with levity and derision, or as a lesser evil than lengthy "detentions" or "tasks."

The right of punishment, in day-school education at any rate, belongs to parents, whose first and last responsibility the child's moral education is, and who alone have sufficient knowledge and understanding of the child to direct such ; while the responsibility of the educational authority it is to cater for—that is, to provide food and exercise for—the developing minds of the children entrusted to their charge. In boarding-school education, where the child is, during term time, entirely handed over to strangers, the question of rights is less easily settled, but the law against *corporal* punishment should be very clearly and definitely established.

Diet.—Healthy growing children, especially in winter, and when taking a due amount of exercise, are usually hearty eaters, and this period of quick growth and many demands upon the child's mental and physical powers requires an ample nutrition. Since the digestion has to deal with an abundant food-supply, the child's diet should be in the main plain and easily digestible. But it should be *varied*, for monotony is, like improperly cooked food, more often a cause of loss of appetite and impaired health than is generally believed. When we come to look upon the preparation of food as essentially a form of skilled labour, and to demand special qualification from those we employ for this branch of domestic service, a considerable advance will have been made in the practical home hygiene of growing children.

In the arrangement of the child's diet the three chief classes of foods must be borne in mind and a due amount of each must be included, but no one must be given in excess. The last mistake often obtains when a child's fancies are too indulgently met. Its individual dislikes must be respected within reason, but these will be encountered less frequently when variety is allowed. The

commonest faults in the diet of school children usually lie in giving too much starchy and sugary food and *too little fat* in a form which the child can easily digest. Also in giving an excess of the least digestible form of flesh-forming food—red meat—or a total insufficiency of any form of this most essential food.

Arrangement of Meals.—Breakfast should not be a hurried meal, and it should be a good meal—that is to say, it should not consist only of porridge, but should include bacon or eggs or fish. Dinner right up to the end of the school age should belong essentially to the middle of the day, and should be placed punctually on the table at one o'clock. Unpunctuality in the kitchen is the most common cause of a hurried middle-day meal for the school child, though his time is limited and he comes in very hungry for this meal, which should be his principal meal. Supper, a light but nourishing meal, should be eaten between half-past five and half-past six, so that there may be a long evening ahead for home-work *and the essential recreation which must follow work and precede bed-time*. Cold suppers are never to be advised for children, nor “high tea,” if by this is meant tea as a beverage and rechauffée butcher meat. The child should have a warm nutritious drink of milk, cocoa, or chocolate, especially the Plasmon preparations of these, or G.B. Soluble chocolate or Hygiama with good biscuits, such as Hovis or Graham or oatmeal or wheatmeal biscuits, at bed-time.

Fat.—Good uncooked butter and cream are the most wholesome and digestible forms of fat which a child can have, while good dripping is often appreciated as a change on the bread. Bread fried crisply in bacon fat and also *fat* bacon are much to be recommended; and it may be said here that foods should be fried in lard, or, fish especially, often in pure olive oil, but never in dripping, which makes them much less digestible. Fresh cream cheeses, eggs, and well-steamed suet puddings are useful means of supplying fat; and in the case of older children sardines with their oil, but it must be remembered that these, with other members of the herring tribe, are indigestible for some people.

A small dose of cod-liver oil in the form of a palatable preparation with malt, say a teaspoonful or so at bed-time, is an excellent adjunct to the dietary during the school age, and should always be given to children who are inclined to be thin or nervous. Children,

however, with chronic indigestion (see p. 295) are not suitable subjects for cod-liver oil, and medical advice should always be sought before resorting to this for them. Here I would caution mothers not to place too much reliance on "tonics," which may be required for one or more of a variety of organs or functions, and the selection of which usually requires medical discrimination. And I would warmly counsel them to turn their attention to the child's hygiene in conditions of poor health—feeding, fresh air, exercise, &c.—the correction of some fault in which is frequently the only tonic needed.

Starch.—A due amount of this is necessary, but an excess can never take the place of the other foods. It should be given in the form of porridge—medium oatmeal, maize meal, hominy, Quaker oats, Plasmon oats, wheatena, and cream of wheat given once a day, and thoroughly cooked, as indicated on p. 199. Cream or butter should be added to porridge, and if golden, or especially maple, syrup is eaten also with oatmeal this will often help to regulate the bowels. Starch may also be given in the form of farinaceous milk puddings, but these should only be given once a day with the principal meat meal, and should be well cooked (see *Recipes*). If starchy food is given with the evening meal, as it more often will be during the earlier part of the school age, it should be of a particularly light and easily digestible nature, such as farina, or Marshall's farola (see p. 197), made into puddings or moulds, or soft, well-boiled flaked rice and milk, or bread and milk. To all these Plasmon jelly (see *Recipe*) may very advisably be added.

Flesh-forming Foods.—Butcher meat should be given every day, but only once a day, at midday. It should always be given (with the exception of pork and veal, which require prolonged slow cooking) underdone rather than overdone, since in such a form it is far more digestible. The lighter flesh-forming foods, such as fish, poultry, bacon, cheese, and fresh tongue, which impose considerably less tax on the digestion than red meat, may well be given with breakfast or supper, and, in fact, from after the eighth year the most suitable supper dishes. A large number of suitable and economical supper dishes, which are nutritious and digestible, may be prepared from these foods. Fish may be given as steamed cup puddings or *timbale*; as baked puddings, or as *kedjeree*, in the Oriental fashion with butter and well-boiled rice, &c. Poultry may be given as steamed

cup puddings, or as a *timbale*, or as an Oriental *pilau* stewed with rice, spices, &c. The use of rice is too limited in England; it requires to be properly cooked, flavoured, and seasoned, and we may borrow many suggestions here from Indian culinary art, and from the *risottos* of the Italians, for the preparation of simple and nutritious dishes. The flesh-forming value of dried pea and lentil preparations (see *Recipes*) has already been referred to. Puddings and other dishes prepared from freshly-grated cheese are much to be recommended, and chestnuts have a distinct nutritious value. Suggestions, necessarily brief, for the preparation of these dishes are given in the Appendix and also in Chapter VIII. At least a pint of milk should be given daily in the form of milk, cocoa or chocolate. Eggs cooked in various ways, and custards prepared from fresh eggs and milk, should have a high place in the scheme of feeding.

Fresh Substances.—Green vegetables children often evince little interest in, and need encouragement to eat, since from them, as from ripe fruits, which should be given daily, they obtain the fresh substances so necessary to health. Vegetables should be thoroughly well cooked—that is, should all be cooked until *quite soft*. Stewed fruits are valuable, and the useful and nutritious but monotonous bread pudding may well be varied by the interspersing of layers of previously stewed apple or other fruit, butter, and sugar; while fresh fruit moulds (see Appendix) prepared with bread, fine florador, sago or gelatine are much to be recommended, especially in summer weather.

Sugary Foods.—Honey, which stands at the head of the list, and should be given plentifully to children, good jams, and golden or maple syrup, should be given with either breakfast or supper. A wider range of sweets at suitable times is now permissible, but frequent “tuck-shop” visits, especially in the earlier part or the school age, are very much to be condemned for the excessive and indiscriminate sweet-eating which they afford temptation for, and for the spoiling of otherwise healthy appetites.

Beverages.—Tea and coffee find a limited place in the diet at this age, but should never be allowed in excess or at unsuitable times. It is a safe rule to allow both only once a day. Coffee, freshly ground each morning by means of a small coffee-mill, should be drunk at breakfast—in the continental fashion, made strong (see Appendix) and used in the proportion of a third or a half of a

breakfast-cup filled up with hot milk. Good China tea should always be preferred for children, and tea should never be allowed with meat. Water should not be drunk with dinner, though it should be drunk freely between meals. In regard to the question of boiling or filtering water see p. 208.

Alcohol.—Alcoholic stimulants should be entirely excluded, unless by a doctor's orders. These are often valuable medicines, but in health, during childhood, and adolescence, all such nervous stimulants should be very carefully avoided.

One of the modern suggestions for the solution of the drink problem is the special training of school children in the evil physiological effects of alcoholic excess, no less than in the *morale* of self-control. Undoubtedly such training should have its place, and temperance, which is moderation, commends itself as a more logical doctrine to teach than total abstinence. We shall, however, do well for the child if we can induce him to set up for himself an ideal not to touch alcohol until he has reached full manhood—that is, has reached the age at least of twenty-five, when he will have had some experience of life and have acquired a degree of self-control which he cannot know earlier; and the physical difficulties which beset the path of adolescence for the boy are in no small degree lessened if he abstains from drinking any alcohol. Ideals are well sought after, though they are not always reached in this world.

Smoking should be rigidly prohibited throughout the school age. This is not only because the effects of excess are more marked, especially on a young heart and nervous system than in maturity, but because a habit is so much more easily formed in adolescence than in later life. The well-known results of excessive smoking—damaged eyesight, heart weakness, lassitude, irritability and depression, indigestion and liveriness—we may put before the boy, and also the experience of athletes who learn that smoking is not conducive to good results.

Bowels.—The importance of efficient bowel action during childhood has been referred to in Chapter IV. Constipation is a common affection during the school period of life, and one which often exists for a long while before it is found out. Mothers are apt to forget that children are naturally careless in the matter of attention to their bowels. They have no knowledge of the importance of the

function, and are busy with their school rush. They require special training in the necessity for a daily evacuation of the bowels, and the evils that follow if these essential drains are choked. These would be better realised by the laity in general if the results were seen immediately rather than remotely, when the relation of cause and effect is not so easily apparent. Constipation, which soon becomes a habit, is the starting-point of numerous evils, particularly in women, and hence the importance of this training can scarcely be over-estimated. The child should adopt the practice of going to the closet every day at the same hour by the clock, preferably after breakfast, and of reporting a negative result to the mother. The best preventives of constipation in children are perhaps the eating of oatmeal porridge with cream or butter, and maple or golden syrup; whole-meal bread and fresh fruit for breakfast, and the drinking of freshly ground coffee with this meal. The use of good fresh vegetable soups (see p. 207), well-boiled onions, and stewed fruit, especially such as prunes, figs and rhubarb. The eating of a due amount of fat, especially cream, the drinking of cold boiled water between meals, and regular muscular exercise, especially *brisk* walking, are useful aids.

Children who tend to be constipated will benefit greatly by a nightly massage of the abdomen, carried out in the manner described on p. 238. If the condition does not yield to such management, advice should be sought, for the continued use of aperients only tends to fix the habit of constipation, and renders its cure after a little while a difficult matter.

It is impossible not to bring forward here an interesting fact to which Sir Thomas Lauder Brunton has called attention, namely, that the *posture* adopted in defecation in civilised countries is totally unscientific, and one which in all probability is an important factor in the production of many of our modern bowel troubles. The abdominal muscles—that is, the fleshy layers which form the outer wall of the abdomen—have an important part to play in the act of evacuation of the bowels, and these have little or no power for the performance of their functions when the child or adult sits on a high seat such as that with which the ordinary closet is fitted. The only position in which they have full play to do their work efficiently is that adopted in “squatting.” The natives of India are said to be almost immune from the disorders of constipation and appendicitis,

and this has been largely ascribed to the "squatting" attitude which they adopt in defecation. It would seem very feasible to overcome at least this one disadvantage of civilisation, especially in the case of those children who tend to be naturally constipated, by allowing the child to "squat" over an utensil on the floor rather than sit on a high seat. The consequent trouble involved can bear little comparison with the enormous benefit to the child of the development of a perfectly healthy bowel and bowel function. Children at school should be made to understand that they are *at once to obey the call of Nature*, and that permission is understood without being asked for when they leave the class-room for this purpose. Failure to observe this rule, owing to want of facilities and sometimes a false idea of modesty, in the case not only of school children but of girls working in offices unprovided with special sanitary conveniences, is a very frequent and potent cause of intractable constipation and consequent ill-health.

Teeth.—There is little doubt that children's teeth decay far more rapidly in the present generation than they did in the past. The causes given are various, such as unsuitable feeding; a want of lime in the drinking water; the use of too fine flours in bread-making, and the absence of hard food which requires chewing in the baby's diet after the first teeth are cut; absence of an essential material in the mother's blood during pregnancy; and such constitutional diseases as rheumatism. No one of these has been definitely proved to be the correct explanation, and probably no one will suit all cases. Unsuitable feeding during infancy is undoubtedly an important factor, and the children who have been reared on preserved foods, and not supplied with the materials essential for building up good sound bones and teeth, often tend very early to show decayed teeth. In certain cases, according to Sir T. Lauder Brunton, a lack of lime-salts in the mother's blood may, during pregnancy and lactation, be a cause of unduly soft teeth in the child and premature decay; and in cases where the mother herself suffers much from toothache during pregnancy, or where the teeth of previous children have shown a proneness to early decay, the mother may, as this authority advises, benefit, as well as her unborn child or breast-fed baby, by taking lime-salts during her pregnancy and nursing if her doctor thinks it advisable, after reviewing other and important factors in the mother's history. The nursing mother should in any case care-

fully include in her diet such foods as whole-wheat bread, and cereals such as wheat and oatmeal porridge, dried pea, bean and lentil preparations, eggs, and milk, which contain the bone-forming elements more abundantly. The teeth of children of a rheumatic or nervous inheritance or history seem frequently to tend especially to early decay; but there are certain facts, underlying the decay of teeth and the prevention of it, the knowledge of which is much more essential to the mother than any theorising on the causes of decay.

The first teeth appear at about six months, and the set of these first or milk teeth is complete midway between the second and third years. They serve the child until it is about six years old, when they begin gradually to loosen, but *should do so without any decay*, and give place to the second or permanent set. The second set is more likely to consist of good sound teeth if the first have been good, and hence, as stopping is not humane in very little children, it is impossible to over-emphasise the importance of *prevention* of decay in the first set. In the prevention of decay two factors are of importance, *cleanliness* and *diet*, and from about the third year a third factor may be added, that of *expert examination*.

Diet.—Hot drinks and iced foods should never be given to the child, since they tend to soften the enamel or outer covering of the teeth, and foods should be given during infancy and early childhood only just warm—that is, at blood heat. Hard food which requires chewing should not be excluded from the diet of the older baby. As soon as it has two or three teeth a long hard and well-baked stale bread crust or a toast crust should be given to it daily to bite on and nibble, and towards the end of the first year children's hard and well-baked rusks, or "pulled bread," but sweet sponge fingers and shortbread fingers and sweet soft fancy biscuits should not be given. The run-about child should be taught as soon as he can understand to bite up and chew his food well—that is, to use both his cutting and grinding teeth; and not to swallow his food until he has well minced and ground it up. This habit of mastication, which not only aids digestion but preserves the teeth themselves, must be taught long before we can safely rely upon it in the feeding of the child—that is, while we are still cutting up and preparing all his food carefully. The use of coarser whole-meal bread, in change with white, and of whole-meal biscuits, may be of value in the diet of the older child.

Cleanliness.—The mouths of all human beings swarm with microbes of various kinds. Certain of these produce *acids* from the *starchy and sugary foods eaten*, and these acids, if allowed to remain in the mouth, soften the enamel or outer coating of the teeth. Hence at least twice a day, night and morning, and most essentially at night, from the time that the child has two or three teeth, the mouth should be well rinsed and the teeth cleansed with at first a rag and an alkaline solution, which will counteract the acid, and as soon as possible with a soft brush and the same solution or an alkaline powder. The best mouth-wash is half a tumblerful of warm water containing a teaspoonful of bicarbonate of soda. It is very advisable to rinse out the mouth *after every meal*, and the mother will be wise if she makes this an invariable rule for her children. The native races of South Africa, who in their savage state possess strikingly good and white teeth and who chew large quantities of sugar-cane, never omit this rinsing every time they have eaten. After taking medicines containing iron or acids this rinsing should never be forgotten; and if the child has eaten biscuits or rusks, or been given a sweet to suck the last thing at night, the mouth should be rinsed in addition to the ordinary cleansing at bed-time. The eating of sweets or other sugary foods by itself cannot harm the teeth, especially hard sweets which require chewing, but *the acid products of these*, if allowed to remain in contact with the teeth, will do the damage.

A small, firm tooth-brush should be brought into use as early as possible, certainly as soon as the child runs about, and at this time a tooth-powder should be used at the nightly cleansing. Costly tooth-powders are not necessary, nor, I think, are very gritty powders advisable, and the following is admirable:—

Precipitated chalk	.	.	.	6½ teaspoonfuls
Bicarbonate of soda	.	.	.	1½ teaspoonfuls

If a flavouring and mild antiseptic action is desired, two drops of oil of cinnamon and seven or eight drops of oil of winter-green may be added to the above.

It is when the enamel has become softened and dissolved that decay follows, and this is brought about by microbes of a different variety to those which form the acid. These collect and flourish *in the particles of food* that remain in the crevices of the teeth and the

spaces between them, and are especially active during the night, when the mouth is at rest and no food is passing through it. Hence the powder must be used with the brush, at night especially, to dislodge these food particles, and the importance of not omitting the nightly brushing is obvious. The teeth should be cleansed by a brushing movement *behind as well as in front of the teeth* and *rather up and down* than merely across them.

Expert Supervision.—In the middle of the third year the child should be placed under the care of a good dentist, who may examine the teeth at regular intervals. Some dentists are specially patient and gentle and successful with children, and it is well, having selected such a dentist, to allow the child to pay one or two visits without having anything done. It must be remembered that having a tooth cavity filled, especially in the case of a nervous child, may be a very great nervous strain. In my opinion no stopping of really bad teeth should ever be undertaken in the case of a young child. If a tooth decays in the first set, owing to neglect or in spite of every care, and gives pain, the child should be spared the nervous strain of toothache and the disadvantage of being unable to properly masticate its food; and also the risk which it runs of swallowing the germs which such teeth harbour, and of the initiation of decay in the second set, by having it removed, and these little teeth are very easily extracted. An exception should be made in the case of the last back double teeth and the eye teeth. These teeth, if it is possible, should not be extracted, since their premature removal is said to be likely to result in an irregular eruption with overcrowding of the second set.

Toothache may sometimes be temporarily relieved by holding a hot strong solution of bicarbonate of soda for a few moments in the mouth, or by the insertion into the tooth of a small pledget of cotton wool soaked in oil of cloves, or, more effectually, where the child is older and can be relied upon to keep still, by the careful use of carbolic acid with all precautions (see *Toothache in Pregnancy*).

If, however, consistent care is taken in the direction of cleansing and preserving the teeth from the time that the first are cut, and if the child is taken to a dentist as above and allowed to gain confidence and then taken regularly for examination, the treatment of the *first very early signs of decay* will, as a rule, cause the child

little pain or nervous strain. In this way not only will sounder teeth be ensured, and overcrowding and deformed teeth *possibly* be prevented, but the child itself will be saved a great deal of the suffering which is inevitable when a cavity which is obvious to the mother is filled, and of the nervous upset which is involved in waiting until toothache occurs to visit the dentist for the first time.

It is perhaps not popularly realised that grave ill-health and disease often exist in conjunction with decayed teeth. But it is a fact well known in medical circles that profound and fatal anæmia, ulceration of the stomach, incurable disease of joints, &c., are often associated with one or more bad teeth.

Clothing.—It should be a rule with mothers that all children should wear wool or silk and wool mixture, knitted or woven, next the skin. Children accustomed to this from infancy will rarely find it irritating, but in those cases where the skin is really intolerant of it, silk is the only safe substitute. Woollen or silk and woollen vests should be worn at all times, and woollen drawers in addition in colder weather, unless the place of both is taken by a pair of combinations of the same material. And in winter weather, in wet weather, and during exercise and play the wearing of these is especially important. Chills are almost an impossibility under such circumstances. Even little boys should all have their “sweaters,” and girls their woollen jerseys for romps indoors and out. The minimum of outer garments should be worn in hot weather, especially in the case of younger children, but the first covering of the body should be of light wool or silk and wool.

The same under-garment should never be worn through the day and night, and children’s underclothing and socks or stockings should be frequently changed. Garments when taken off should be thoroughly aired, like the bed and bedding in the morning.

The objection to wearing wool, on account of its shrinking and hardening, is much lessened if woollen garments of the best quality only are chosen, and if care is given to the washing, which should always be done at home. These should not be soaked, but should be washed, rather by squeezing than by friction, in a warm “lux” lather, well rinsed, and dried as quickly as possible, pulling in all directions the meanwhile, and advisably mangled when half dry. Warmth and looseness with the minimum amount of weight should characterise the child’s clothing. The girl should

not wear corsets until the fifteenth to sixteenth year, and then they must have special consideration. The only hygienic corset is one which is made and worn in a certain way. It should be light and elastic, never heavy and unyielding, and should be specially made to the figure by an expert French corsetière; few English women at present have the art of making corsets. Only the best and most pliable whalebone should be used, white spotted coutil will prove the best wear, and the bust should be cut very low, *well below* the breasts, so as to avoid all pressure on these, and all impediment to the action of the lungs and due expansion of the chest. For girls of a stout build a well-fitting "lining" or under-bodice is sufficient to support the breasts. It is essential that the corset bust should be cut so loosely and so low that its upper rim altogether clears the breasts, especially in the stooping position, and that bones should end well short of this margin; otherwise a dangerous pressure of these last on the breast will result. The upper part of the corset should be shaped, as the expert corsetière will shape it, so as to curve out forwards over the upper part of the abdomen and allow for the enlargement of the stomach after meals as well as free and easy breathing; the corset hips should be long, so as to confine the hips and support the lower part of the abdomen, though not so absurdly long as a recent fashion has decreed—the girl should be able to bend and touch the floor comfortably. Such corsets, which cost about two guineas and can be repeatedly cleaned by the maker, thus lasting much longer than cheaper ready-made corsets, will infinitely repay their extra cost, and no others can safely be worn by any well-developed girl or woman with at the same time due regard for good appearance. The stout French "Tricot" corset, with few bones and of almost everlasting wear, would always be selected as the ideal corset by those who are able to pay about double the price named above. The girl should be taught to let out her corsets to the point of extreme looseness before taking them off, and most essentially before putting them on. Not only does this preserve the shape of the corset, but the habit of keeping the laces knotted and wearing the corsets always at the same fit is a pernicious one, since there are physiological variations in the figure, which is often larger on first rising in the morning, and usually at the monthly period, and these must be allowed for. The corsets should be pulled well down when first put on and before tightening

the laces, and the underlying figure—the stomach and lower abdomen—at the same time well drawn up. All pulling in must be guarded against, and the partiality of the tailor and dressmaker for tight skirt-bands and very tight-fitting bodices ; and the girl led to see that it is the due proportion of the bust, waist, and hips, and not the small girth of the waist or bust, which makes for beauty, as she will know if she ever visits the Venus de Milo in her Paris shrine.

Shoes should be carefully chosen from those large firms who stock not only ordinary sizes but *intermediate degrees of sizes* with also variations in the *shape* of the shoes, as only thus can a shoe be got to fit the foot perfectly, if it is not made from a special last, which, but for the trouble and additional expense, would always be preferable. *The soles should be thick*, never thin, for outdoor wear, and the heels should be neither very high nor very low, but a medium height, and should most essentially have *broad bases* : the whole balance of the body is injuriously altered when its weight is thrown on to a high heel which tapers towards the ground. There must be room enough at the toe of the shoe to ensure free movement of the toes. This does not necessitate an unduly broad and ugly square or rounded toe, but it does necessitate a *long* shoe, the pointed toe of which comes beyond the extremity of the big toe. For the girl who tends to go over on her ankles and for rainy and muddy weather, boots rather than shoes are to be recommended, and the use of such as of a short tweed or coarse serge skirt and coat (which form far healthier rain garments for exercise than mackintoshes) and a sensible veiled hat, to tie on on windy days, will avoid the necessity for staying indoors in inclement weather. All children should essentially wear knitted or thick cashmere stockings or socks in winter weather, and in wet weather especially extra felt-covered cork soles may very advisably be placed in the shoes.

Bathing.—The necessity for carefully regulating the bathing during childhood and the use of a bath thermometer have been referred to in Chapter IV. The gradual lowering of the temperature of the water as the child grows older has been advised and the giving of a daily cold bath by the eighth year. It must be clearly understood that by a cold bath I mean a bath at 50° F. and not a bath taken at any temperature which the water running from the taps may

happen to be, since this varies very much according to the temperature of the air. Those who prefer to take a bath many degrees lower will doubtless benefit by it, but in the regulation of children's cold baths, 50° F. should be taken as the lowest suitable temperature for a cold bath; and when the water is below this, hot water should be added to make it 50° F. If this were always done, the not unnatural inclination to shirk a bath on the very cold days would be less frequent.

The daily cleansing of the skin is a necessity for physiological reasons alone. The skin is honeycombed with tiny openings or pores, and through these sweat, which contains waste products, is thrown out every day, it is said to the amount of one to two pints. The sweat contains an oily substance, which renders it particularly likely to cling to the skin and seal up the pores, and hence it requires efficient removal daily.

A cold morning bath, which consists of a short plunge, with on colder days a previous soaping outside the bath, is, if it can be taken, of great benefit to both boy and girl. Under those conditions discussed in the sections on puberty in Chapter XVIII.; during periods of poor health; in the case of rheumatic children, or, if the reaction is such that the child remains blue and shivery or goose-fleshed after a cold bath—tepid or warm baths should be given, and the cold water applied as a spinal douche at the end of the bath. In the majority of cases, *healthy* children, who have been gradually accustomed to a cold bath and taught to like their daily cold tubs, will react well to them and greatly benefit by them. The cold bath is in such cases an excellent tonic to the constitution and to the nervous system. It ensures deep breathing, stimulates the circulation of the blood, and prevents colds and chills. It also refreshes the child and gives him a new sense of vigour for each opening day, and in no small degree increases his sense of self-respect and refinement.

Warm baths, not hot ones, should be taken once or twice a week in the evening for cleansing purposes, since cold water does not open the pores sufficiently to be efficient in this respect.

Ordinary bath soap may be used for the body, but a soft pure soap is necessary for the face, and the "peerless" Erasmic is one of the most suitable for this.

A girl's long hair should be washed every ten days.

Failing a good egg julep, lux or egg yolk well mixed with warm

water will best cleanse the hair. Hair brushes should be washed every two or three days, since, if they are not, dirt and grease are brushed into the head and hair. Brushes with steel bristles should never be used, but a stiff brush with good bristles (cheap brushes are never to be advised) should always be used to remove tangles before a comb is used. If this is not done, not only is a good deal of unnecessary discomfort caused in the case of children with sensitive skins and fine hair, but the hair is very much broken. A softer brush should be subsequently used for polishing the hair; and the head itself should be well brushed as well as the hair. A caution is necessary to mothers and nurses against straining the hair tightly back off the temples. The hair always grows with difficulty and spareness on the temples, and needs all the encouragement possible, as the girl will find it difficult to dress her hair becomingly later on if it is too thin to well cover the temples and to be worn fully and loosely in this region. A child's hair should be cut and singed freely and frequently during the first few years, and the shorter it is kept then the more luxuriant the growth later on. The girl should be taught to take a pride in fragrant shining hair and to know that it can only look well groomed and glossy if it receives, not only frequent cleansing, but a daily *brushing* for a quarter of an hour or so, as well as combing; and she may well be allowed to take a few lessons in hair-dressing from a good firm when she begins to dress her hair.

It is a wise plan to teach children always to wash their hands, brush their hair, and attend to their nails before meals, and they are very apt to forget the ears and their complete drying at the daily tub. Glycerine, or lotions containing it, should never be used for rough faces and hands, since it has the property of withdrawing the natural moisture from the skin, and thus increasing its dryness. Benzoin and cucumber lotions are best for this purpose, and lanoline or cold cream smeared on at bed-time.

Children's complexions during the hot weather in many of our Colonies need special care if they are to be preserved. Bathing the face once or twice daily, or, if possible, every time the child has been out in the hot sun, with a cupful of warm milk or milk and water is a most effectual means of keeping the skin soft and smooth, afterwards rubbing in a very little cold cream. It is very advisable at all times to use soft water for the face, rain water in

the country, or to soften hard water with a good "water softener." Sunburn of the face, hands, or legs, in the case of children with more delicate skins, is sometimes unavoidable and very severe, but paddling, and bathing especially, in the very hot sun should not be allowed, and if children must go out during this part of the day these parts should as far as possible be protected.

Chilblains.—Chilblains are the result of a poor circulation of the blood, one which is not sufficiently brisk to nourish the extremities in cold weather. They are more common in nervous children, who are often cold and thin. They will be best prevented by keeping the circulation active in cold weather, by brisk walking and other muscular exercise. It is very advisable to use hot bags and bed-socks at night if the feet are cold, and it is *not* wise, as is often believed, to avoid them. The child should be *warmly clothed* with woollen or silk and woollen garments next the skin, and thick-soled boots and shoes. Thick woollen gloves also should be worn out of doors, and if the chilblains are on the hands these gloves should be worn at night. The nutrition of a child with a tendency to chilblains should be kept at a high level, and plenty of fat should be given. If attention is directed to these details the chilblains will be more effectually cured than by any local treatment. When unbroken and irritable, the chilblains may be rubbed, after soaking in warm water, with Compound Camphor Liniment. When broken, I think nothing better can be rubbed in than the ointment recommended for cracked lips. The part round about the chilblain should be well massaged—that is, well rubbed and kneaded several times a day to improve the circulation in it. If the child is in poor health, or if broken chilblains refuse to heal, medical advice should be sought.

Cracked Lip.—A cracked or split lip should be cured promptly, or it may become very intractable. In the older child a drop of friar's balsam, which causes momentary smarting, should be run into the crack and allowed to dry on it twice a day, and at bed-time, in the case of both young and older children, the following ointment should be procured from the chemist and rubbed in and left smeared thickly on: An ounce of lanoline with sufficient friar's balsam mixed into it to make it a dark brown colour.

Sleep.—A proper amount of sleep is a very important consideration in the life of a school child, but in our anxiety to keep him

up to school regulations and standards we very often do not allow him this. He requires an abundance of sleep now, as never in his adult life, to ensure relaxation from the strain his life imposes on his still-growing nervous system and to refresh his active brain. Seven in the morning is quite early enough for a child to begin his busy day. The practice in vogue at boarding schools of making boys and girls rise early, usually at six o'clock or earlier, and prepare lessons or practice, on an empty stomach in a chilly room, is one which should be prevented by mothers, by arrangement with the head master or mistress. The very effort which it is to the child, in winter especially, to force himself out of bed and apply himself, cold and hungry, to mental effort is in itself a proof that it is bad for him, and the extra time would be far better spent in sleep. It is a very wise indulgence and need mean no lapse into unpunctuality to make the breakfast-hour for school children an hour later during holiday time. If the child sleeps, it is a very definite indication that he needs the extra amount of sleep; if he does not sleep, he is better up. It would be of inestimable benefit to the growing school child, both boy and girl, especially during the hot summer days in the Colonies, if a midday rest could be taken every day. But convention and its arbitrarily established rules, based, it would seem, less upon a desire to ensure the child sound mental health and development than upon an ambition to impart to him as much knowledge as possible in a prescribed time, hinder school children very often from receiving their proper amount of sleep. Children living at high altitudes, where insomnia and other nervous troubles are of very frequent occurrence, especially require an abundance of sleep.

The best general rule for the sleeping hours of all children is, I think, that *they should have as much sleep as they will take*. As a minimum, for those who wish some guide in regard to them, one would suggest the following. Until the child is five years old, bed-time from six to seven and twelve hours' sleep. The bed-time should then be made gradually later, until at ten years old he goes to bed not later than eight o'clock and sleeps eleven hours. From ten to thirteen years his bed-time should be not later than nine o'clock and his sleep not less than ten and a half hours. From thirteen to sixteen years his bed-time should be not later than half-past nine and his sleep not less than nine and a half hours.

Children should be encouraged to sleep alternately on the right and left sides—never on the back, as this often leads to restlessness and disturbing dreams. Cold feet demand a hot bottle and extra blankets—this is important—and the window should not be closed to keep the child warm. It is well to note the child's posture during sleep; he should not sleep curled up with the knees drawn up towards the chest, which he will often do if his feet are cold. His body should be straight, and one good pillow is preferable to two or three. Efficient dark linen blinds should, especially in the case of young children, ensure the child not waking too early in the morning in summer, and beds should never face the light.

Breathing.—Breathing is a very essential function for the maintenance of life, and ignorance of *how* a child should breathe and *what* he should breathe is accountable for more ill-health than is generally realised. Essentially, breathing consists of the two separate acts of the *taking in* of oxygen, that vital gas which stimulates all the functions of the body, and later the *giving out*, when it has done its work in the body, of the same element, only in a changed form, now useless and even dangerous to the body.

It is essential that the air, which contains the oxygen, should reach the lungs in a perfectly pure and warmed condition. The air surrounding us varies in purity; it is purer on a high hill-top than in a valley, and it is purer in the country than in large towns; but it is never, where any life is, sufficiently pure to realise this ideal quite perfectly. Hence Nature has provided us with a filtering apparatus, situated at the back of the nose, where the entering air is purified from dust and germs, and warmed by its arrest there and contact with the warm blood in its vessels, and thence reaches the lungs in a pure and suitable form—and this makes it obvious that we should breathe through the nose and not through the mouth.

It should be every mother's aim to secure good development of the chest in her child—the foundation of which, it must be remembered, is laid in infancy by such a nutrition as ensures good strong bones and firm flesh; good deep breathing, which ensures the expansion of the chest and the constant flooding of the lungs with life-giving oxygen, and especially the habit of nose-breathing; and she may begin to drill him in this from his run-about days. Nose-breathing should be encouraged by teaching the child to blow his nose effectually. Children are naturally care-

less in this respect, and their inattention to keeping the nasal passage clear is a frequent cause of mouth-breathing. It is advisable to institute regular exercises as soon as the child can follow instructions, and the best time to carry them out is at dressing and undressing time. The child should stand loosely clad with the shoulders thrown well back and hands by its side, and with the mouth shut, and the mother should watch the expanding chest as it takes deep breaths through the nose, while she counts aloud for a few minutes. She should do the same as the child stands with its arms extended in a straight line with the shoulders, and again with its arms held straight above its head. If this is done persistently, nose-breathing will become in time an unconscious habit. The cold douche to the spine following the bath from the second year onwards is a valuable method for ensuring the expansion of the chest and full deep breathing.

Several times in the day children may with advantage be made to stand and take deep breaths, holding each for a brief space and then letting it out again, and this is especially useful out of doors. The exercises must be very short, especially at first, and only three or four breaths must be taken at one time; for, just as in beginning singing lessons, the first efforts to take deep breaths and control these properly are fatiguing. The value of singing, even for little children (see p. 386), and also of swimming and rowing, has already been referred to. The child who has good chest development and chest expansion, and who is constantly breathing fresh air, has the first essential in the prevention not only of diseases of the chest, but of disease generally.

What the Child Breathes.—The value of fresh air to the child, even more than to the grown adult, has been constantly referred to in these pages, and under this heading must be considered the adequate supply of fresh oxygen to be taken in, and the efficient removal of those waste products breathed out. The child who lives and sleeps in rooms without an open window has not enough fresh oxygen and is constantly inhaling his own and other people's waste products—literally, suffers from a continued form of blood-poisoning. Such a child easily catches cold, and colds make mouth-breathers, because they block up the nose, and mouth-breathers develop adenoids. He is less resistant to all diseases generally, and especially to infectious diseases, since his blood is not charged with

oxygen, which is not only life-giving but a deadly enemy to the germs that cause consumption, pneumonia, and all infectious diseases. The open-air treatment of consumption is based on the fact that oxygen kills nearly all germs. A cold itself is a mild infection by germs, and though it is predisposed to by a chill, a chill will be less likely to produce a cold in the presence of an abundance of oxygen. People who live in rooms into which fresh air is entering by day and by night do not constantly catch colds.

The window or windows—for the more windows the better in children's rooms—of the room the child occupies should be open in winter and summer to a degree varying with the external temperature both by day and by night, except when entering rain or prevailing fog or dusty winds render it impracticable. Opening the door is not a substitute, since the house air is little purer than the room air. In cold weather a fire should keep the room warm, not a closed window, and at night the air should be prevented from directly falling upon the young child by a screen, and by placing its bed far from the window and out of the line of draughts; but heavy window curtains are very much to be deprecated in children's sleeping-rooms, because, however widely the window is opened, they exclude most of the fresh air. Chimneys also should never be stopped up, since they aid in ventilating the room.

On the colder days, when it is not possible to throw open all the windows widely while the children are in the room, this should be done while they are out of it, so that the room may be well flushed with fresh air and the accumulated impurities removed. This should be done not only immediately the children leave their sleeping-rooms but frequently during the day. Children should be taught early to appreciate the least stuffiness in a room or unpleasant odour about their clothes or food, no less than to appreciate the varied fragrance of the flowers. The cultivation in them of a keen sense of smell is often overlooked, but very necessary.

Eyesight.—Defects in the sight of children are very common, and especially likely to develop at the beginning of school life, when the eyes are for the first time much used. Eye-strain must therefore not only be guarded against, but watched for, so that, if existent, it may be recognised and the child taken to an oculist in the early stage when treatment is so hopeful.

Often the defect arises from inattention to the ordinary rules for

preventing eye-strain, but sometimes the child inherits it. The natural sight of young children is "long-sight," and seeing things which must be held close to the eye, such as reading, sewing, and the set handiwork of certain kindergarten occupations, such as sewing pricked cards and plaiting coloured paper, which are all near work and should never be allowed before the age of six, are trying to the eyes, as is holding a book too near them at any time.

There are certain rules which should be adopted for the preservation of eyesight in the management of all children. The child when reading should learn to hold his book a little over a foot from his face. He should not be allowed to read, sew, or draw, or do any near work in a dim or fading light; and when he is engaged in such occupations, the light should fall on to his work from the left side. Books printed on highly glazed paper should never be given him to read. All his print should be clear and large, and if he is an inveterate reader he should not be allowed to read too long without a break.

The posture he adopts in reading and writing and doing his home lessons should be carefully watched. The height of the table above the chair should be such that he can comfortably place both his arms upon the table without raising or lowering his shoulders—that is, the table must not be too high, nor the seat too low for the table. His head should be held erect, not drooping downwards, and his book held up when reading in a chair, or round shoulders, narrow chest, and spinal curvature will threaten him, in addition to eye-strain. A book-support is very useful for reading.

If any of the following conditions are noticed in a child, *eye-defect* must be suspected and an eye specialist consulted, who should essentially be a doctor.

If he persistently holds his book nearer to the eyes than one foot length, and equally if he holds it much further away than this.

If he cannot recognise distant objects as distinctly as one would expect him to.

If he soon tires of reading, and his eyes look tired, reddened and watery, after reading or writing, or towards the end of the day.

If he has a peering way of looking at things, of frowning constantly, and if his eyes seem unusually sensitive to light.

If he often complains of headache, giddiness, blurring of the sight, or of feeling sick without an obvious cause.

If he has frequent styes, and if his eyes are inclined to be sore, with reddened lids, or if a puffy appearance of the eyelids is noticed.

Squinting, in however slight degree, should always have medical advice. A complaint of *inattention or dulness* at school on the part of the child should always direct the mother's attention to the ears especially, and also to the sight. Defective hearing is a frequent cause of supposed inattention at school, which is often the first sign of this condition.

Nervous System.—The child who shows a tendency to nervous twitchings and spasmodic movements, who is constantly "making faces," or who is inclined to periods of sleeping restlessly and eating fitfully, or who is over-sensitive and inclined to emotional outbursts on slight provocation, or often "difficult" in many ways, should be very especially and carefully watched for over-pressure at school, especially in the direction of home-work. Such a child needs occupation, but is especially liable to nerve strain. A suitable and specially nutritious feeding should be attended to carefully, for the child needs not only good blood but a supply of good firm fat. Special attention also should be given to an ample amount of sleep with warm feet. The child will often sleep much better if there is a dim shaded light, or a night-light in the room, and its supper should be a very light and easily digestible meal. Woollen or silk and woollen underclothing should essentially be worn, as the circulation in such children is rarely very good, and an abundance of fresh air and regular outdoor exercise should be ensured. Salt baths (see Chapter X.) and the cold spinal douche after the daily bath (see Chapter IV.) will often be useful. Good long holidays should be ensured, especially for town children, and spent in surroundings where the best possible air and good fresh country produce are obtainable. Such children in my experience do not do well at high altitudes, though a moderate elevation will often suit them.

For a child in whom the above tendencies are marked and persistent, the mother will do well to seek her doctor's advice.

The Spine.—Curvature of the spine is not an uncommon malady in quickly growing girls during the school age. If a girl is noticed to be constantly tired and unable to sit up for any length of time, and especially if she complains of backache, this may be suspected, and she should be stripped, made to stand easily with her

arms by her sides, and the spine should be carefully examined. At first one shoulder blade may be noticed to be more prominent than the other, and later the opposite shoulder is seen to be higher, and perhaps a slight bend in the spine will be obvious. If these signs are found the girl should be taken to a doctor, who will advise special treatment and spinal exercises.

The best way to guard against the trouble is to give such a quickly-growing, often-tired girl plenty of healthful muscular exercise, and plenty of rest at the end of the day in a low easy-chair with a sloping back and a footstool. Her posture when in bed at night should be watched to see that she does not sleep curled up or with her head too high. Her corsets should be carefully chosen; she should have a rest on her back during the day, and she should be cautioned against standing on one leg, and encouraged to sit, and especially to walk, with head erect and shoulders back and chest thrown forward. Skipping has been mentioned as a useful exercise for the prevention of spinal deformity, and girls may well be encouraged to keep up skipping during the school age, and those who have a tendency to spinal curvature should especially practice backward skipping.

It is well to remember that all growing, and especially very quick growing, makes a big demand upon the strength, which cannot be expended equally in all directions at once, and mental capacity and power of application are often quiescent while a girl or boy is growing very fast. Hence brilliant results at school are not to be expected nor desired if this is the case. And mental vigour, true ambition, and practical achievement are far more likely to characterise the child's life later on if he or she is not pressed for results, especially to pass examinations, during this period. It is a fact, which mothers may prove for themselves by observation and inquiry, that some of the best and most productive work is done by men and women whose school reports would have occasioned disappointment to ambitious parents, and that many clever and brilliant children make nervous adults whose mental powers are as uncertain as they are unproductive. I would very strongly urge mothers to desire *development*, not results, during the school period—that is to say, to be content if their boys, and especially their girls, are well occupied in learning such things as will develop their mental capacities and be useful to them in this way, whatever their occupation later on.

CHAPTER XVII

HIGHER TRAINING OF THE SCHOOL CHILD

"We weave about them webs of good or ill which leave the impress on their souls."

SOME one asks why do so many mothers succeed with their boys and girls in first childhood, and fail to hold and impress them when they come to later years. One would almost think, if this is so, that it is because those important questions of the special understanding of the development of the mind, and also of the necessity for the appreciation of temperament in the life of the individual, are apt to steal away into the background at this time of very real need. The mother may feel sometimes overwhelmed by special difficulties in her environment, by petty worries, often the hard battle with inadequate means. She has probably never realised that her babies will grow up, *are* growing up with the quickly passing years, into young men and women. Since the days of infancy—when only her devotion and unwearying watchfulness preserved the new and helpless life, the sleepless nights and childish illnesses, the days when she comforted childish woes for broken dollies and hurt fingers, and smiled at little related happinesses, and was ever creating little new and joyful "surprises"—till now seems to her but a brief span, and she may still be over-absorbed in the physical care of her children and forget that their activities and interests are wider and need a wider sympathy and comprehension. Maternity has its moral as well as its physical aspect, and, to quote a modern French writer,¹ "As the time goes on the material bond between mother and child is bound to grow slacker and slacker. Suckling itself is a secondary act; providing spoon-meat is very different from suckling; and so the tie is continually loosened till the day when the child can do without her. But in proportion as the physical bond slackens, the moral bond

¹ R de Maulde la Clavière, "The Art of Life."

ought to grow firmer and stronger. The day that her son is known for a brave, a brilliant, an honourable man will she not feel more than ever his mother, with a deeper, an intenser feeling than when she nursed him at the breast?"

A true mother from the first moment of her first motherhood lives little for herself, but it is during this period perhaps, when she carries all the cares incidental to the governance of a little family, in addition to the management of a household, that she needs must muster all her resources, her highest qualities of body and mind and soul. It has been said that a perfect mother should possess those qualifications ascribed by Miss Wiggin to an ideal kindergartner, "the music of St. Cecilia, the art of Raphael, the wisdom of Solomon, the meekness of Moses, the administrative ability of Cromwell, and the patience of Job." This is pretty reading, but if we attempted to realise such an ideal we should hitch our wagon to a very distant and elusive star.

To fill her place adequately a mother would seem to need, besides the gift of unselfishness which seems to belong naturally to mothers, the cultivation above all of an "æquanimity,"—that quality of an *even mind*, a strong, calm, unruffled disposition and self-possession, on which William Osler, one of our greatest living physicians, has recently published a very suggestive essay. She will need also a trained faculty of judgment; a breadth of mind, and a sympathy wide enough to include outside interests as well as those of her own little home circle—"One who is a mother only to her own little ones is not one of God's mothers, but only a woman who has borne children." An infinite tact, too, a love that is disciplined, a high ideal of life generally, mental culture, and physical health, since she can rarely afford to be tired.

It is so difficult for an average mother to find time in a single passage of the sun across the sky to ensure the efficient execution of all the numerous little practical duties of wifedom, child and house care, and social obligation, that only a strong woman will be able concurrently to give these higher functions of mind their fullest development and exercise. Yet this is essential if the home is to be an ideal training-ground for the boys and girls growing up within it, and if she is to look back on these days as *mes moments heureux*. The task will be much easier if the early training has been all that it should be; but its exactions do not lessen each month

that independence grows, and as each unfolding character shows more plainly the child's own individuality—the temperament which we must study so closely in our children, our friends, our acquaintances, all those with whom we have to deal, if we are to understand motives rightly, estimate deeds correctly, and give the right help and encouragement to all whose lives touch our own. Every one has a temperament which he owes to the varying factors of his heredity, and which his environment can only modify, and we shall not find two people alike in this world, nor two children alike in the little flock. A proverb tells us that “Our ancestors peep at us out of the windows of our babies’ eyes”—there are ancestors on both sides, and the child is himself a new creation and possesses a new individuality. In the understanding of this will lie one great secret of success in the moral training of the child ; and here, how many mothers must have shared the sentiment of that brilliant and gifted woman who, when she became a mother, wrote in her diary : “I am the mother of an immortal being ; God be merciful to me a sinner.”

There are those who divide all children into two types—the Quiet and the Restless children, or the “men of thought” and the “men of action.” But in these two classes there are many subdivisions, and many shades in the colouring of each picture. We shall have to understand each child, and let him feel that he is understood, and to suitably “prescribe” for each one.

For the restless, fidgety, excitable child, full of thoughtless action, with many bumps and tumbles, fond of change, demonstrative, often boastful and rather domineering, full of excuses and guesses, inclined to be superficial in his acquisition of knowledge, easily thwarted, easily angered, and easily penitent—for whom irritation must be avoided while self-discipline is inculcated, and whose impulsive energy must be bridled and directed into the right channels. For the quieter and slower, more retentive-minded child, who sometimes thinks much but does not find it so easy to say and do, who sometimes finds it easy to sulk and hard to forgive, who needs the spur of suggestion and encouragement, and whose self-expression we must in every way encourage. For the sensitive, introspective-minded child, who is too often and too easily depressed and discouraged, who needs active occupation, cheerful surroundings and enlivening companions to kill out an innate

morbid strain before it becomes a fixed mental habit. For the highly-strung, imaginative child for whom the strain of puberty is peculiarly full of risks, of a mind and speech that often tends to be unreal, of hysteria, of the formation of unworthy friendships and adorations, and of the easy susceptibility to unhealthy influences; who needs, more than all others, the sense of confidence in and friendship of the mother. For the tender-hearted, easily wounded, emotional child, who must learn the value of a disciplined sympathy and the truer unselfishness of well-controlled emotion. For the strongly independent, forceful, and purposeful child whom we sometimes see, born to be a leader, whom diplomacy and suggestion must discipline rather than coercion. A mother often feels that she understands one child better than another, perhaps because the child shows more of her own characteristics, and out of this sense of something akin develops a natural sympathy, and the child is easier to manage and seems to give her greater happiness. It is not difficult in such cases to fall into the sin of favouritism and to become over-absorbed in such a child. The other children feel this difference instinctively while as yet they do not understand it; it leads to jealousies and loosens the bond which we wish to keep so intimate between child and child. It is heart intimacy which the mother must seek, not only with each of her children, but between each child and the other. It must be her aim to plant the seeds of such friendships between brother and sister, sister and sister, brother and brother, as will survive the inevitable separations of the future, and constitute a lasting and ever-ready security against the sorrows, loneliness and individual difficulties that may come with the later years. The children must never be strangers to each other's pleasures, work, and ideals, and hence mutual interest in all that concerns the other we must encourage from the earliest nursery days; and *loyalty to each other* before all the outside world—the free giving and invariable respecting of confidences, we cannot too warmly advocate through school and later days.

When reproof is necessary, it should be strictly private between mother and child. I think that the lesson can never go home nor the child's confidence be won unless this is the case, and the habit all too common, among mothers of growing daughters in particular, and frequently of grown-up daughters, of "pulling-up" and exposing a fault, real or supposed, before strangers, can only kill

confidence and any respect worthy the name; and also I think we have all known what our discomfiture and sense of disgust have been when we have been obliged, as visitors to a household, to sit out such domestic squabbles and snubbings. The practice of enlisting one child's sympathy with herself against another in fault, which is giving one child the right to assist in punishing another, can scarcely be too strongly condemned, yet it is not an uncommon one. Little "tale-bearers" must be discouraged, and only constant watchfulness will prevent unfairness, injustice, and quarrelling between the children. The practice of bickering and quarrelling, if not checked quickly, soon grows to be a habit. The law against actual fighting must be one of cast-iron severity, and difficulties the mother must settle by arbitration, hearing both sides, while she insists on a calm demeanour and strict truthfulness; quells self-pity and whining, and ever appeals to the child's sense of reasonableness, which will grow with each new experience. How much patience and tact and diplomacy will she need, but how rich will be her recompense if under such circumstances she can exercise these arts.

Obedience the mother will get from her children if she seeks co-operation always rather than coercion, gives explanations which are nearly always possible for what she asks, and asks nothing which is not strictly necessary.

Self-respect she will best inculcate in the children by encouraging their *pride* in personal cleanliness, and in showing a wholesome and pleasing personal appearance to the world. There is a vast difference between such a pride and vanity, which will be apparent to children who are properly trained. The little habits of punctuality and orderliness the mother will show the children the application of in social life, and their essential unselfishness. With not a few people I think tidiness and punctuality become a fetish and a great burden to other people, but children can be taught the safe rule, based on social ethics, that such unpunctuality and such untidiness as interferes with the comfort or rights of others is in each case an act of selfishness as definite as any deliberately committed. It is very necessary to early anticipate the childish love of disorder—the "scattering habit"—and to teach the small child from the beginning to replace his books and toys in their cupboard and his sand in its box or tub, not only because some one else will

have to pick them up, but because the room looks nicer so ; we may always present the idea of neatness and order in its artistic aspect.

The Boy.—The boys should be taught considerateness, unselfishness, gentleness, and the little courtesies to their mother and sisters and all women generally by which we chiefly distinguish a gentleman, be his garb, his occupation what it may in later life. They should be encouraged to set up a high standard of practical honour, and taught to couple strong manliness with a tender heart, and we may well encourage their interest in and love for little children, which is more instinctive in some boys than others. The boy who delights in teasing and worrying or frightening a small child has never had an appeal made to the true manliness lying dormant within him. And the boy who finds pleasurable sport in setting dogs on to cats, or thrashing his dogs and horses, has never been taught the evil of cruelty, and necessity for exercising a protective kindness to the dumb creation, or given the opportunity of learning its great powers of affection, companionship, and intelligence ; nor will he later make the true sportsman, whose code is a high degree of technical skill—swift death, “unforeseen, unfear’d,” in the open. It is natural to many a little school-boy to go through a phase of “bearishness” and roughness which in its most typical form has brought him the title of “the most graceless specimen of humanity” ; but this is partly the result of animal spirits, and partly assumed as being according to his code of the period quite *comme il faut*. The mother will get at this boy by sound common sense ; too obvious sentiment will only intensify his dawning notion that all women are “feeble” in his own peculiar meaning of the word, on a plane apart, to be treated with a pity that is somewhat akin to contempt, and not to be taken too seriously. He has long refused to be embraced and kissed ; the ethics of his mother’s love he will return to later when he has proved them. This is the time when to a great extent she gains or loses her influence over the boy’s after life. She must impress him as an essentially sensible being ; she must so enter into his interests of work and play as to make him feel that she is one of his best chums ; above all, she must not fall into the habit of constant petty correction—that nagging which, with the memory of their home life, some men associate with women all their lives.

The Girl.—It has been said that “a man thinks, while a woman

feels." If this is so one would imagine that we should seek for perfection in the encouragement of the woman to think and the man to feel. Perhaps the ideal of character which should underlie and colour the girl's whole training, whatever lies before her, should find its embodiment in thoroughness, reliability, the power of calm unbiased judgment and decision, breadth of mind, and true, wise independence of thought and action, and all these are the outcome of the disciplined effort to fill each working-day with *good work of sound value*, no less than of mental culture. It is through such work that the man acquires these qualities, and it is only through steady fruitful occupation which requires real exercise of the mind that the woman will develop them. Mental capacity depends on use of the mind, for "growth is dependent on use"—the arm that has been long held in a sling, like the limbs after a long illness, are shrunk and weakened. Our brains, therefore, we must develop like our muscles, and the girl whose statement we not infrequently hear, "I haven't the brains to do so and so," more usually has never seriously *used* her brain; and the older she gets the less easy she finds it to begin. Her ultimate object may be different, less often the attainment of her own living or another's—though she too, for economic reasons, is increasingly entering the ranks of those who contribute to the world's work—but her own special work, the rearing and education of the coming generation, need these qualities very essentially.

I think that we must desire for our modern girls less superficiality and less dilettantism, a higher sense of duties better understood than heretofore, and of the claims that Nature makes on them, not only as individuals, but as citizens and as potential mothers. The happiest girl must be that one who is brought up through these opening years of her life to feel that the secret of life is not only "to love well," but "to work well." If she leaves school with such an ideal in her mind, there can be none of the *ennui* which so many girls know then, and continue to know, if marriage does not arrive very shortly to afford them change and a purpose in life.

This is the time when the freshness of youth, its vigour and enthusiasm all combine to render acquisition easy and to give work a sweet taste, and when whole-hearted devotion to a task, a cause, an ideal is more possible than at any time later, and yet it is for many girls the idlest and least productive period of their lives.

A leading London physician is reported by a recent author to have said that 70 per cent. of the girls who consulted him were ill because they could not get on with their mothers. One's own observations would often make one inclined to agree, for girls at home are often not as happy or independent as they should be, nor are their friendships with their mothers what they ought to be, and might so well be; indeed, these friendships often first begin when the girl marries or enters upon a career. Is it because mothers do not realise that the independence which girls consciously or unconsciously desire, depends upon a vital need to be doing something which is really worth while. That there must be "an undercurrent of real work and a purpose in life," if life is to be fully satisfying and if their complete development is to take place, and that minor domestic occupations, especially where there are several daughters at home, fancy work, practising, calls, shopping, novel reading, hockey matches, or even district visiting and other untrained philanthropic work, will not furnish this.

Is not their attitude rather "The girl will probably marry; she is not especially 'clever,' and there are lots of little things she can do in the house"? "Clever" is rather indefinite in its meaning, and it is rather the "capable" girl than the clever girl, like the individual, which we want. Marriage is her best and most probable fate; but who can say that girls need no preparation for this, need to serve no apprenticeship to life, and no less the fuller development which such preparation and such apprenticeship means, as the future mothers of the race? Or that the ideal wife is not the ideal comrade and helpmeet to her husband, which the uneducated, undeveloped woman—often petty and trivial, prejudiced, exacting, and obstinate; or over-intense, wearing and unbalanced—never can be? But marriage cannot be ensured for every girl, and one cannot forget those frequently encountered refined unmarried daughters of fathers to whom death came prematurely, who experience in their social surroundings and opportunities all the limitations of a small income which it is too late to set about augmenting. The widowed mothers of young families left very insufficiently provided for, whose necessities increase from day to day. Those helpless dependent women who, sometimes unwillingly enough, must rely on the help of a generous brother or other male relative for their sustenance. Above all, we cannot forget the woman who does not marry when

she leaves behind her her girlish illusions, if she is without a real and living interest to fill her days, and to continue her self-development, even if she be fortunate enough to possess a sufficiency of means to support life in comfort. This "double future which lies before all girls in their youth" is too often the basis of a popular argument against giving a girl the training, when the means are forthcoming, for a special career. If she shows inclination to seek such in the ever-widening field where Medicine, Dispensing, Nursing, Teaching, Kindergarten, Child Nurture, Social or Municipal Work, Gardening, Poultry Keeping, Dairying, Cookery, or the other branches of Domestic Economy, Literature, Music or Art, offer her one, she should surely be encouraged, even if necessity does not call her forth into the ranks of the employed. Useful information in regard to all the above mentioned as careers for girls will be found in the "Englishwoman's Year-Book" (Adam Black & Co., London), and it were well, as its Editress suggests (1905), that Advisory Committees, which might make facts concerning them more easily accessible, were organised and attached to all our schools. Whatever the girl takes up, the wise mother will impress upon her the necessity not only for choosing the work she feels will be her own, but for the acquirement of sound technique—especially in Music, Literature, and Art; for it is the absence of this which marks the work of many women with mediocrity, if not with failure.

I would not advocate that a girl whose parents can furnish her with a good and happy home and all the requirements of life should leave it in order to compete with those who are not thus situated and forced to earn their living, but I would suggest that every girl should fill her working days with *productive* and congenial occupation; should have some work for which she alone is responsible, some sort of niche for herself alone to fill; and that she should be equipped to support herself if necessary if the family funds allow of this when the sons have received their essential equipment. And I would warmly advocate that a girl after she leaves school should be ensured as much fun—dances, dinners, theatre-going, and pretty frocks—and social opportunity as her circumstances permit of. This is essentially the time for these, and those girls who miss them now rarely find time or opportunity nor the same zest for them later on. If life has its *leitmotif* it will never become for any girl the wild and futile chase which is

involved in trying to do everything and wear everything everybody else does, and to know everybody, which leads very frequently to nervous exhaustion and usually to *ennui*, and, since it is an unhealthy mental and moral atmosphere, to the ultimate loss of much of the best that life has to offer her. But over-absorption in some special pursuit, particularly perhaps of an intellectual character, is perhaps as great a danger in the case of many women as the absence of a *leitmotif*; such an atmosphere is no less unhealthy, mentally and morally, and the wise mother will cultivate in her girl the same sense of proportion here as the boy usually possesses naturally; urging upon her the "blessedness of well-ordered" no less than of "well-chosen" work.

There is, I think, a very wide field of good work open to girls of education and refinement with abundant leisure time, in assisting the State to give the little ones of the poor their natural rights. For this they need but common sense and a sound knowledge of the needs of infancy and child-life, and of the conditions of the children of the poor, and of those associations which exist to meet these needs, and to give the children scope for play. The children are said to be the "most valuable assets of the State," but perhaps it is rather the mothers to whom one might apply this title, since it is they who have the moulding of the children for good or ill. And there is more to be said for and hoped for from educating these mothers, present and future, than for the establishment of crèches, children's courts, or so-called reformatories. There is a practical school of child study and child care open to our girls here in securing for the children by educating their mothers, or very especially those who assume this office for remuneration in the case of unfortunate babies "put out to nurse," sounder health and better nutrition, cleaner, purer and more airy homes, and a happier and more beautiful environment; in place of feeding which, if it does not poison them, robs them in large measure of good health and development and of their natural right of happiness, and an environment which too often fosters anti-social instincts and low ideals from the very outset of their lives. I can conceive of no finer profession for leisured girls than to answer this "cry of the children" still with us, nor of one more valuable to the girl herself, and I would place it before, though it might well include, even kindergarten training. In England and America many societies

exist for the betterment of child life, and one has recently been organised in Johannesburg, and one may hope for the establishment of such before long in every populated centre in England and our Colonies.

But *at home*, in the holiday time of the older school girl and in the interval after she leaves school, lies the opportunity for her first essential education, which is of the home and for the home; for be she wife or woman-worker, her home, however long in coming, will rank as her first sphere, and will largely be the index of the perfection of her womanhood. The ideal, however, for our modern girl differs widely from its old interpretation, for it must include mental culture—a broad humanistic culture—no less than enlightened child and house care, and opportunity to develop her special interests and faculties. Such freedom as the last would imply is as essential to the older girl as to the older boy, who naturally claims it, and need in nowise prevent her preparation for those special duties for “the welfare of children or comfort of households,” which some time or other fall to the lot of every woman.

The mother will, if she is wise, direct her attention to and give her *definite practical instruction* in those domestic questions of household expenditure, the cost and selection and ordering of foods and materials; the stocking and management of the store cupboard, the linen cupboard, and the larder, and she may well acquire something of store-room and still-room skill, the potting and preserving in which we in England have fallen behind of late, but which in our Colonies we so often find we need. In the principles of house-cleaning, of such a *nettoyage* of well-selected kitchen ware as the continental kitchens know; of laundry-work and home needle-work; every girl should know how to keep house and personal linen in repair, how to knit and make simple garments, and especially children's clothes. Every wise mother will encourage all her girls to reach the high-water mark of skill in the art of nutritious, varied and economical cookery—household, children's, and invalid cookery; not forgetting the numberless possibilities of the chafing-dish, so well known in the United States. She will instruct her in the principles of carving, of table arrangement and decoration, and entertaining; the regulation of the duties of servants to employers and of employers to servants, and the laws applying to both, as also those of landlord and tenant; and the knowledge requisite for all

women in the conduct of their business affairs. She will not forget to ensure, in the education of her girls, that essential training in the care of children for which many opportunities will offer if they are not passed over; and the principles of sick-nursing and hygiene, with their A B C of elementary anatomy and physiology. Practical knowledge and training no less than mind is necessary to efficiently accomplish or supervise all the above, and a woman of small mental capacity and no methodised training not only loses many valuable opportunities, but "goes on muddling all her life"; and, as Spencer says, "We that have but span-long lives must bear in mind our limited time for acquisition."¹

No less will the mother show her the need and advantage of mental culture—that "rich furnishing of the mind"—in her own pleasure and resource, her conversation and her correspondence. She will, giving her Frederick Harrison's most excellent advice to readers that "Man's business here is to know for the sake of living, not live for the sake of knowing," encourage her to read and to include in her book-shelf and library selection not only good fiction, but good essays and writings, such as those of Browning, Stevenson, Spencer, Henry Drummond, Emerson, Thoreau, Lamb, Ruskin, Dante, Plato, &c. Also biographies and "Letters"; books of modern travel, life in Greater Britain and in foreign countries, such as the "Life in Town and Country" Series, Hearn's "Japan," "Kokoro," and the various "Empire" Series, &c.; good works on popular science, on the political and social questions of the day affecting the national welfare, especially of women and children; and the literature bearing on child-life, and its study and culture. She will seek outside her Temple of Peace, as Gladstone called his library, to stimulate her interest in all these, and her desire for knowledge and capacity for work on independent lines, by encouraging her to attend good popular lectures, and by giving her all possible opportunity to travel with eyes that see and ears that hear both at home and abroad; and she will recognise the educational value of good music, good plays, and good pictures.

The close of school life is not the close of study, but rather the beginning, and if a modern writer speaks truly, "Nearly every eminent woman in the last fifty years has had self-instruction or was an irregularly instructed girl."

¹ "Education."

She will show her the value of the art of good conversation, "which alone accustoms a woman to discern the real value of men . . . which brings out something more than conventional opinions, and exposes mere surface convictions . . . but in which, before strangers, we must not lay bare our souls."¹ Of the good correspondence which is the hall-mark of the cultured woman; the discretion in self-expression, in the variety and choice of language, the ability to write a business letter, a social note, and a satisfying letter to a friend. The value of the social art—the *savoir vivre*, the breeding and ease which is the charm of the cultured woman of the world, which knows no want of resource, no gossip, familiarity, bookishness, or "shop." The value of good appearance, that natural elegance and individuality which should belong to every woman, if "a woman's charm consists in the art of making all intercourse with her agreeable." The mother will show her that the appearance of the "frump" or "dowd" or of the "hoyden" is inconsistent with womanly dignity, and she will do well to encourage her to glean some of the secrets of the art of the well-dressed woman of taste—to cultivate that of adapting fashions to herself, and not becoming herself a slave to them. An effort should be made from the very beginning to cultivate a child's taste, which is well called "the flower of individuality," for this, like everything else, is chiefly a question of environment and training. Life is largely a compromise and all these are ideals, but the girl who is trained to strive after them must make the best woman, wife and mother; must know wider views and sympathies, and escape the growth of the "unlovely asperities," or the arrest of self-development, which in later life sometimes disfigures a woman's character, and leads her to feel that hers is the forlorn lot of the "Superfluous Woman."

Home Culture.—An ideal home will not be without its atmosphere of general culture, and a good tone in literature, as in conversation, will leave its impress on the boys and girls when they go forth from it. Culture in the general sense cannot be obtained at school, for there is too much ground to cover there and too great a tax on available time. The holidays especially, perhaps, will be times for this enlarging and embroidering of the child's school education; with something of this kind they will be

¹ R. de Maulde la Clavière, "The Art of Life."

refreshing oases in the yearly routine ; without it, rather desert wastes.

It is very advisable to encourage each child to adopt a genuine hobby, be it a musical instrument, such as the guitar, or a wind reed-instrument, or a tool chest and little outdoor shed workshop, or the work of a naturalist, &c., and, by giving him good books of instruction, or tuition where necessary, and good equipment, to excel in this.

Visits may be paid during the holidays, with children fortunate enough to be within reach of them, to our national galleries and buildings, museums, especially of natural history, and zoological gardens, art collections, potteries, various factories, &c. Courses of practical home cooking lessons may be instituted, or of home nursing for the older girls ; and the fundamentals of home needlework learnt through making doll's garments and all the necessities for the doll's house. This last, which may become a very complete and beautiful model—I have in mind one seen in a Dutch home—may form a very practical school of needlework and upholstery for the girls, and of carpentering for the boys. Collections of specimens, living and otherwise, may be studied and attended to now. Cameras and stamp albums may be brought out, and the many various children's card and other games for indoor use, obtainable at any large store, will profitably occupy many a long evening. A weekly magazine may be started with a parent as editor, contributions by the children being received on subjects of general or current interest, and stories and illustrations, and in this way the children will learn to express themselves well.

It is, I think, very desirable to foster a "love of country," a spirit of true patriotism in children. Not only English children, but colonial children may well be taught to know their England, all about her national buildings and historical scenes, her heroes, her reigning family, and her defences ; and English children, in the interests of Imperialism, should not be strangers to the life and interests of those beyond the seas. We may teach the little children much through the medium of stories, pictures, and soldier games, and in the case of the older children, of cadet corps exercise ; of visits where possible to famous buildings and scenes, arsenals, a man-of-war, the mint, a fire brigade station, &c. ; glimpses of soldiers and bluejackets, and national fête-day proceedings ; such

spectacles as military tournaments, pageants, &c.; and pictures and books and discussions centring round all these, and life in the various outposts of the Empire.

The wise mother will supervise the reading of her children; she will allow a due amount of light literature, not only suitable to the child's age, but selected for its worth and literary value, and its power of stimulating their imaginations and multiplying their ideas. She will, bearing in mind the necessity to educate now the children's taste in literature, select such reading, good of its kind and varied for them, as will not only accomplish this and widen the circle of their experience, but give them the appreciation of and quicken their desire for all the mines of information and pleasure which literature holds in store for them. It is very necessary to choose story books for the children which *will* stimulate imagination and afford material for fresh thoughts, and which will not, as many of the children's books of the present day rather tend to do, represent merely their own home and school lives, with their well-known surroundings and happenings.

She will choose from the shelves of our larger book-shops and our public libraries such books as—

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| "Robinson Crusoe." | "Drums of the Fore and Aft." |
| "Alice in Wonderland." | "Jock of the Bushveld," by Sir Percy Fitzpatrick. |
| Kingsley's "Water Babies." | William Long's charmingly written animal stories (Ginn & Co.), such as the "School in the Woods," &c. |
| Lord Brabourne's "Stories for My Children," "Moonshine," and other works (Routledge, London). | Sewell's "Black Beauty: the Autobiography of a Horse." |
| Barrie's "Little White Bird." | "Tom Brown's School-days." |
| Hans Andersen's Fairy Tales. | Alcott's "Little Women." |
| Grimm's Fairy Tales. | Ainsworth's "Old St. Paul's" and "Tower of London." |
| Mrs. Bourhill and Mrs. Drake's "Fairy Tales from South Africa" (Macmillan & Co., London). | The "Children's Heroes" Series (T. C. & E. C. Jack, London). |
| Arabian Nights Entertainments. | Kingsley's "Heroes," "Westward Ho!" and "Hereward the Wake." |
| "Little Lord Fauntleroy." | Fitchett's "Deeds that Won the Empire" and "Fights for the Flag." |
| Lamb's "Tales from Shakespeare." | Aesop's Fables. |
| The "Told through the Ages" Series (Harrap & Co., London), including "Stories of King Arthur," "Stories from the Odyssey," &c. | Gulliver's Travels. |
| Hawthorne's "Tanglewood Tales." | Don Quixote. |
| Kipling's "Jungle Books"; "Just So Stories"; "Captains Courageous"; "Wee Willie Winkie," and | "Swiss Family Robinson." |

- "Mr. Midshipman Glover, R.N.," by T. T. Jeans.
- Mitton's "Children's Book of London."
- Ewing's "Jackanapes," and other works.
- "Uncle Tom's Cabin."
- Greenwood's "Merrie England: Stories from History and Travel" (Ginn & Co., London).
- Avery's "Armchair Adventurer," and other works.
- Andrew Lang's Colour Fairy Books, and Animal Story Books.
- Countess d'Aulnoy's "Fairy Tales" (George Routledge & Sons, London).
- Joseph Jacobs' "Indian Fairy Tales" and "Celtic Fairy Tales" (David Nutt & Co., London).
- Captain Brereton's books, Collingwood's, Gordon Stables', Henty's, Manville Fenn's, and Ballantyne's—all beloved of boys.
- "King Solomon's Mines," "Alan Quatermain," and other works of Rider Haggard.
- Edna Lyall's "Donovan," and "We Two."
- Mrs. Molesworth's and Mrs. Everett-Green's books, especially for girls, and Amy le Feuvre's.
- Especially for reading with the children:—Arnold Forster's "Citizen Reader," which will teach them how Parliament and the government of the people are organised.
- Holden's "Real Things in Nature" (Macmillan & Co., London).
- Arabella Buckley's "Life and Her Children," and "Fairyland of Science" (Macmillan & Co., London, and Edward Stanford, Charing Cross, London, respectively).
- Grant Allen's "Story of the Plants" (George Newnes, Ltd., London).
- "Ages Ago: the Ancestry of Animals," by Edith Carrington (Geo. Bell & Co., London).
- Rev. J. G. Wood's "Popular Natural History" (Routledge).
- Gatty's "Parables from Nature."
- A. J. Church's "Stories from Spenser," &c. (Seeley & Co., London).
- Parkin's "Round the Empire" (Cassell & Co., London).
- Marshall's "Our Empire Story" and "Our Island Story" (T. C. & E. C. Jack, London).
- Lady Brassey's "Voyage of the Sunbeam."
- Stevenson's "Child's Garden of Verses."
- Eugene Field's "Poems of Childhood" and "Lullaby Land" (John Lane, London).
- Whittier's Child and Nature poems.
- Selected poems from Tennyson, Longfellow, Wordsworth, and Emerson.

Later, the children will appreciate many of Stevenson's novels, Scott's, Dickens', Reade's, Lytton's, Kingsley's, Blackmore's, Dumas'; Conan Doyle's "White Company" and other *historical* novels; Stanley Weyman's, Henry Seton Merriman's, and Marion Crawford's works; Frank Bullen's sea stories; and Katherine Tynan's works, especially for girls; Anthony Hope's "Prisoner of Zenda" and "Rupert of Hentzau"; William Le Queux's works and Quiller Couch's novels; Gladys Davidson's "Stories from the Opera" (T. Werner Laurie, Clifford's Inn, London), and the "Romance of Empire" Series (Adam & Chas. Black, London).

Such a list is very incomplete, for the choice of suitable books for children nowadays is almost unlimited ; but in including the above, and others under different sections in the book, with, where it would seem necessary, their publishers, to facilitate easy ordering, I have especially in view those mothers, not a few, who in some of our distant Colonies are far removed from books, and whose children in consequence not infrequently grow up without the joy they bring them and without their liberal culture.

There is an old and foolish dictum that children should be seen and not heard, but it was not originated by one who understood child nature and its needs. To children who are growing up with an increasing sense of mental power and vigour, whose imaginations are stimulated by innumerable new experiences, and whose attentions are fixed on a diversity of points which they are learning and hearing about daily, talking is not only a vital necessity at the right time and in the right place, but is an indispensable means of development. In the interests of this, liberty of speech cannot be denied them, and there is little need to fear that any well-brought-up child whose manners imitate those of well-bred parents will become obtrusive in his conversation or trespass on the rights of his elders in this respect. Children love to talk, especially at meal-times, of their various doings and interests, and happy are those school children who can look back on these little gatherings with mother—the “artist of home life,” the centre of everything that is wise and helpful—as occasions for the happiest little pleasantries, a growing general knowledge from discussions on subjects of general interest, the exchanging of many opinions, the formation of plans, and the candid and confidential expression of the many impressions and ideas that crowd these active brains.

Children should never hear, nor be allowed to indulge in, petty gossip or carping criticism of others, for this is not the age for criticism of our neighbours. The child has yet to learn to know himself, and though we may acknowledge his observations of wrong ideals and actions in others, and the inevitable and not undesirable comparison of them with those that we have tried to instil, we shall yet endeavour to check and show him that it is best to avoid, whenever possible, an unkind word ; teaching him daily and hourly the “lessons of charity and sweetness” which change cross looks and angry words into “soft looks and gentle accents.” We shall try to

cultivate in the children not only a sweet and even temper, but, above all, a happy and hopeful disposition, showing them the essential selfishness of depression and discontent. We shall try to convince them that we "create our worlds and ourselves" and our happiness; and to train them to that faith in an ultimate good which will enable them to take the bitter with the sweet and often to turn the bitter into the sweet. The wise mother will caution the girl not only against petty views and criticisms, but against petty worrying—fostering and cherishing a small worry or grievance till it occupies a position in her mind out of all proportion to its worth; training her to form the habit early of taking hold of a worry, domestic or otherwise, facing it and putting an end to it then and there—to remember that hers is a "ministry of joy and peace." We shall be careful to guard children against confidential talks with servants, which are often especially interesting at this age, and especially undesirable, though we shall essentially teach them to show courtesy and consideration at all times to those socially beneath them, and to appreciate when they see it the dignity of labour. We shall endeavour to cultivate in them that fine respect for others, no less than self-respect, in their bearings, that unaffected courtesy which knows no class distinction and which is the hallmark of the gentleman or gentlewoman. We shall satisfy the children's need of fresh outside companionship, but we shall carefully choose their friends. While we guide their opinions with unremitting care and tact into the right ways they know not of as yet, we shall ever seek to foster the spirit of independence of thought and action—for we have to arm them and prepare them for the time to come when there will be no one to obey and no one to direct.

Sincerity and the habit of truthful speech will have become the child's second nature if his environment and training have been all that it should be. It is now, I think, necessary to define clearly for our older children what we mean by the commandment, "Thou shalt not lie," and to show the children that it is the truth and nothing but the truth which they must speak, even though there must be occasions when it must be withheld. To evade it in order to gain an end which we know to be wrong for ourselves or others constitutes deceit; to evade or withhold it to gain an end which we know to be legitimate for ourselves or right for others cannot be so classified, I think, nor inconsistent with the practical moral

standards of at any rate a great many of us. It is undoubtedly a nice discretion which is necessary here, and one which could not safely be allowed a young child, but the school children are growing up into men and women, and are going out into the world, where "the race is not always to the swift, nor the battle to the strong," and they need guidance on these vital questions. It is impossible as life widens out, and its experiences and human relationships multiply, to always admit the plain direct truth, and few of us, I believe, invariably accomplish this in practice. In the business world it would often mean economic disaster, and in social life not a little want of common charity and sometimes actual inhumanity.

In the cultivation of the child's will power, the consistent drilling in the habit of self-control from his infancy upwards, lies the development of his moral strength, and his future efficiency in the competitive moral trials ahead. This has been referred to as the first great essential in the child's early moral training; and such a development of his will power alone will enable him, in the direction of his private conduct, to say, not "I ought, or I can, but I *will*" do the right, will enable him

"To master Destiny by force of will

To wrest success from failure, good from ill."

The advantage of a strong and rightly directed will, will be very valuable to the child in later life, in no small degree affecting and safeguarding his mental and physical no less than his moral life. It is this which will give him command over those characteristics which we speak of as good, no less than those we call evil—his self-confidence, too often a fancied strength, his generosity, &c., which will enable him to overcome the temptations born of his own especial temperament, for that way lies "his escape from sin," and there can be no such thing as passive virtue. In such a development of his individual will lies the blessed power of "diverting his lines of thought" whereby he can prevent a cherished ideal, a strong conviction, a great disappointment from preying on his mind or distorting his views and sense of proportion, which is so fruitful a source of nervous strain or wreckage, eccentricity, or sometimes even madness.

From the atmosphere of such a home, with its ruling spirit of

kindliness, gentleness, sincerity, and progress, the children will all unconsciously adopt ideals and incorporate them in their lives. The father and mother will teach them these far more by example than by precept. The mother will strive through the ups and downs, when things go wrong that the children know little of, to preserve ever for them her "æquanimitas." She will be for them ever the same, since she lives in great part for them, and since their lives will reflect her own. She will remember the Eastern phrase, "Let the Lotus of your life bloom; the bees will come of themselves," and the comment on it, "Not one drop of poison must be admixed with the life-giving honey the bees suck from that flower-cup."

As for the father such as we would picture, the brief hours that he can give his growing-up children will be hours of pure delight, remembered hours of tender intimacy, strong, wise sympathy, encouragement, and emulation. Hours which, with their lessons of love, the memory through the gathering years leaves hidden, beyond the limitations of speech, yet reflects in every thought and action of common daily life.

As to the religious belief which lies behind all moral training, it would seem presumptuous, if possible, for the writer in such a book as this to offer suggestions to mothers as to methods. Every mother will teach her children the few vital truths, and, if she is wise, these only, and freed from the bewildering mass of dogmas and doctrines which belong to the differing systems of belief, remembering that though "childhood is the age of faith," criticism comes with later years. She will show them that a religious conviction is a delicate and personal thing, not to be obtruded with embarrassing tactlessness nor critical disparagement of the differing convictions of others, who must be left to choose their own "ways of approach and methods of service." She will, if she is wise, send them back to the simple words and teaching of the great Teacher Himself, encouraging them to know and to study in the best modern English the Gospel narratives recorded by simple honest men in simple language, which, though fragmentary, have stood the test and criticisms of more than nineteen hundred years, and find their application in all times and all places. She will encourage her children to think and ponder these questions while they grow "in wisdom and stature and favour with God and man"; and later to

seek grounds for their faith and convictions rather than accept the convictions of others.

She will let her children "peer dimly through the little window of science" at the workings of God, in whose "designs there is no haste, no rest, no weariness, no discontinuity," and learn there of miracles and harmony and love; and obtain renewed hope and conviction to speed them from one milestone to the next. She will thus best give them the later opportunity of learning that we are all, like Froebel's children, growing trees "having our roots in the dark places of the earth but our branches in the sweet airs of Heaven." It will not be difficult for the mother, whatever her own creed or articles of belief, to teach her children that, as Dean Farrar says, "the Eternal is not the *future*, but only the *unseen*. . . . God no dim abstraction, but the Father in whom we live and move and have our being," since love is the theme and these are all lessons of love.

"For life, with all it yields of joy and woe,
And hope and fear . . .
Is just our chance o' the prize of learning love,
How love might be, hath been indeed, and is ;
And that we hold henceforth to the uttermost
Such prize, despite the envy of the world,
And having gained truth, keep truth :—that is all."¹

¹ Robert Browning, "A Death in the Desert."

CHAPTER XVIII

PUBERTY AND SEX TRAINING

" I feel the stirrings in me of great things,
New half-fledged thoughts rise up and beat their wings,
And tremble on the margin of their nest,
Then flutter back, and hide within my breast.

Stay thou a little longer in my breast,
Till my fond heart shall push thee from the nest,
Anxious to see thee soar to heights divine—
Oh, beautiful but half-fledged thoughts of mine."

—ELLA WHEELER WILCOX, *Poems of Cheer*.

By puberty we mean that period of life when the sexual organs of the boy and girl are taking on special growth and maturing so as to be capable of the great functions for which they were intended, namely, reproduction. This important period, which occupies, broadly speaking, the interval between the eleventh and sixteenth years, must be considered from two points of view, the physical and the mental; in fact, it "sees a reorganisation of the child's entire being; a reorganisation based in the physical, but extending upwards through the intellectual, and affecting largely the moral."¹

It is very important, I think, for a mother to realise the change that occurs in the individual during this period. The social instinct discussed in its beginnings in Chapters XII. and XIII. is much more strongly developed, and at the same time the egotistical sense receives a new impetus. Girls and boys more strongly feel their personalities now; opinions, in which they know no middle view, are more freely expressed; they are less tolerant of other people's, and full of "unreasoning enthusiasms" and emphatic aversions; and while their minds are necessarily more occupied with themselves than heretofore, they often show a strong desire for new social relationships. The emotions are more strongly developed, and the powers of feeling more intense, and the mind, if not healthy

¹ Preston W. Search, "An Ideal School."

and well occupied, may form a habit of undue introspection. The girl will not uncommonly develop a strong religious sense, often awakened by her confirmation, which may pass away as quickly as it came, for it is one more based on a phase of sentiment and quickened imagination than on life's necessity and experience. She may, feeling a new and strong awakening of her woman's nature, according to her temperament, indulge in hero worship or violent and confidential friendships, which last may be less safe than the former; or she may, following rather the boy—a type we not infrequently see in our modern High School or boarding-school girl—develop an inordinate games worship and enthusiasm for athletics and school slang, to the exclusion of all other more feminine interests and sentiments. The boy's special traits will become more intensely active, he will become more self-assertive, and will demand more liberty of speech and action. He will sometimes become quixotic or extravagant, and his intensified social instinct, which often makes him very intolerant of home and mother and sisters for the time being, and more inclined to seek outside social experience, would, without a father's guidance, often lead him into scrapes.

The mother appreciating these changes will not repress the natural and essential growth of individuality, though she will apply her wisdom and sympathy to the guidance of her boy and girl along such lines of helpful suggestion and healthy occupation as will lead them to sound man and womanhood.

Puberty in the Girl.—There is a general enlargement of all the sexual organs, and changes take place in the ovaries, as the result of which microscopic egg-cells are produced, swept along the tubes, and shed within a few days in a monthly flow of blood and other materials from the interior of the womb; and if one of these "germ cells" met in its passage with the male element or "sperm cell" it would be capable of fertilisation. The blood vessels of the womb are filled with extra blood during the time that this discharge proceeds, and the womb in consequence becomes larger and heavier. There is greater strain on the ligaments which sustain it in the pelvis, and the womb itself is tender and more susceptible to cold and chill; is more intolerant of pressure by the bowel behind it, or from without, as by corsets and bands, and its muscle is more irritable—with an irritability which easily gives place to pain—and it needs rest and warmth during the time that the dis-

charge collects and oozes through the narrow neck and mouth into the vagina.

Thus we see that the girl is a potential mother each time that she is "unwell," and can understand that these important and very definite changes in organs which are as yet immature and unaccustomed to them, must react upon and impose more or less strain upon her nervous system; and that they would indicate the necessity for the most careful management of this period of the girl's life, and for special caution during each monthly period of any woman's life. It is only the doctor perhaps who sees and appreciates, often long afterwards, the illness and suffering which results from mismanagement and indiscretion at these times; but all women, and especially mothers, can and should understand the meaning and importance of the function, and such right handling of it as will prevent such evils.

There are certain signs which herald the onset of puberty in the girl. These almost always occur earlier in hot countries than in cold, and, generally speaking, a tall, well-developed girl will show them earlier than one of a small make, but no anxiety need be felt if the girl reaches her fifteenth year without any signs, though if she tends to be anæmic and tired it would be advisable then to consult the doctor about her. We recognise the approach of puberty when the girl's figure begins to show more womanly outlines, the breasts become larger and more rounded; a growth of hair appears in the armpits and on the lower part of the body. Her voice loses its childish ring and becomes fuller and deeper. She loses her childish look and much of her childish *insouciance* and spontaneity; she becomes dimly conscious of her womanhood now, and this sex-consciousness makes her sometimes shyer and generally more self-conscious. If she was a "tomboy" she responds to Nature's call now and becomes quieter and more retiring. She often complains of feeling tired or of backache, and sometimes of vague discomfort or pain in the lower part of the abdomen, and often shows a heaviness and tendency to the formation of blue shadows round her eyes. A certain unsteadiness of the nervous system almost invariably accompanies puberty, and is seen in greater or less degree according to the child's temperament—the least so in those who are phlegmatic, and the most so in the highly strung and in boys in the latter case not infrequently, as well as in girls. The mind is very

definitely and very peculiarly affected, and this it is most important for mothers to realise. A girl is often not only irritable, more emotional, and difficult to manage at this time, but eccentric traits not uncommonly develop, which if correctly understood, estimated at their true value and rightly handled, prove transitory and self-limited.

The girl's mental outlook naturally alters and widens. The new experience of the monthly flow awakens a train of thought in her mind as to the meaning of this, and animadverting on stray things she has read and heard, she puts two and two together, develops a natural curiosity to know more of what she instinctively feels it is her right to know since it concerns herself, and evolves her first notions of sex and birth. Too often, in the absence of the right knowledge learnt in the right way, she forms wrong and unhealthy theories about these big questions, which colour her opening life, and must lower her ideal of maternity and marriage, as the consideration of these come before her, until, and sometimes after, she has learnt their secrets for herself.

When the mother sees the definite signs of puberty she should carefully guard the girl against over-fatigue and chills, and should tell her of what impends, and prevent the possibility of the shock which the first monthly flow often is to a girl who is unprepared for it. Daily cold baths should be stopped, and tepid baths or, on very cold days, baths at 100° F. should be taken instead. Cold baths should not be resumed until the monthly flow is well established—that is, until it is occurring regularly every month. It sometimes takes a little while before this is the case; one or two periods may occur and then an interval may follow during which none are seen.

When the flow has begun there is one rule which should be laid to heart by mothers who desire for their girls a healthy womanhood, wifehood, and motherhood, and this is that for the first three years of puberty, *during the first day of the period, the girl should have absolute rest of body and mind*; rest on her back for the first few hours until the flow is well established, and rest “taking things easily” in the house, particularly avoiding standing, and discarding corsets for the rest of the day. No games, drill, or any other physical exercise, except walking, should be allowed during the remaining days that there is any sign of it, and no sensible woman

will ever bicycle or dance or undergo any unnecessary or severe exertion during her period. We shall not teach the girl that she is an invalid as each month comes round—far from it; but that her body requires rest during these times until her organs and functions are fully developed, and while she can take it. She will have to carry on her daily occupations later and can do so then with more impunity. Tepid baths should be taken daily instead of cold baths for the week preceding the expected day of the period. Sponging should be used instead of baths during the first three days of the flow, and after this warm baths until all signs of it have disappeared. Thin-soled shoes should be carefully avoided, wandering about bedrooms and bathroom with bare feet, sitting on cold stones or damp grass, damp clothes and any other possible sources of chill.

It is natural to nearly all women to suffer some discomfort during the first few hours of their period, and a girl may experience no more than this; but very often, in the first few years especially, she has more or less pain. It is of little use to say that this *should* not be so, since it is a natural function; we have to deal with civilised women, not savages, and to realise that it *is* so in many cases, and search for the cause and relieve it, for we have no right to let the child so early feel the burden of her womanhood.

I have indicated in the description of what occurs at the period enough to suggest the chief causes of pain and discomfort. The heavy womb needs rest—the girl must lie down, therefore, and take the strain off its ligaments and supports. It needs warmth—a hot bag should be given to her to press against the lower abdomen, and in cold weather another bag to her feet, and she should be covered up warmly. It is intolerant of pressure—therefore corsets, if worn, should be discarded and waist-bands loosened; and a most potent cause of pain, a loaded bowel, should be avoided. It is a wise plan to give the girl on the two days preceding the expected period teaspoonful doses of “salts,” in hot water containing the juice of a fresh lemon and well sweetened, two or three times in the day. To give this when the period is just beginning is to increase the pain, and it should therefore be given beforehand. Cold baths should be stopped, tepid baths taken between periods, and *warm* baths during the week preceding the expected date of the period.

In most cases this treatment of rest, loosening the clothes, and

warmth, with a preliminary aperient and avoidance of cold baths, will prevent pain. If it does not, and the child suffers from obvious pain before or with the first signs of the flow, she must have treatment for the pain. Phenacetin, taken with a hot drink, often acts like a charm in such cases, but the writer is loth to advise self-medication with this drug, which, like many other pain-relievers, is a heart-depressant, and hence should only be given under medical advice, when the heart can be ensured to be sound and the dose can be carefully regulated according to the age of the subject. Gin or brandy is often a favourite home remedy; this is sometimes useful, especially in conjunction with phenacetin, but not always suitable, and therefore it should be again given under medical advice, and the girl *should never be told she is having alcohol*. It should be prepared outside the room, and brought to her in hot sweetened water flavoured with essence of peppermint, strictly as medicine; the blinds should then be drawn, and she should be left to sleep, and wake relieved. The application of a large poultice (see *Poultice for Abdomen*), and of one to the lower part of the back, if pain is complained of here, is often helpful.

Flatulence is very often a cause of pain during the first day of the period; and if the bowels have acted well the same day, the following mixture from the chemist will often, by removing the flatulence, give relief, if warmth and rest and looseness are ensured at the same time:—

Sal volatile	30 drops
Spirits of chloroform	20 drops
Tincture of ginger	20 drops
Spirit of mindererus	2 teaspoonfuls
Syrup of ginger. . . .	30 drops
Camphor water to make	2 tablespoonfuls

Four doses to be sent; two tablespoonfuls to be given every three hours while the pain lasts. In some girls the flow is scanty, and this is often the cause of pain. Such a girl should have no cold baths, nor even tepid ones, but just comfortably warm baths taken at night—not hot baths, since these used frequently are enervating and weakening to the heart. On the evening before the period is expected, besides the dose of salts, she should take a prolonged hot sitz-bath, and with the first indication of pain or flow should soak

her feet in a bath of hot water to which a couple of tablespoonfuls of mustard have been added, or the doctor may sometimes order a hot sitz-bath. Such a girl is often anæmic, and may be much benefited by medical treatment for this. When the flow tends to be rather excessive, on the other hand, the girl's rest *on her back* should be prolonged as long as the excess continues. Hot baths should be *avoided*, and, if the loss seems to be too great and weakening to the child, medical advice should be sought.

Puberty in the Boy.—Briefly, in the boy puberty means, besides the enlargement of all the sexual organs, the formation of “semen.” This is a thick, whitish fluid in which float numbers of tiny microscopic, tadpole-like bodies, endowed with active movement, called “spermatozoa.” These are formed in the testicles, and through a complicated system of minute tubes reach two small reservoirs in the pelvis, called the “seminal vesicles,” in which they remain floating in the semen, until either it is thrown out in the act of sexual intercourse, or, as in Nature's other way, when the reservoirs become overfilled, overflows and escapes from time to time naturally. If one of these spermatozoa, or “male cells,” met in its passage with the female “egg-cell,” it would be capable of fertilising the latter.

We recognise the approach of puberty in the boy by a change in the voice, which becomes deeper and more manly, and the growth of hair on the chin, and as in the girl, the mental changes in the boy at puberty need, far more than the physical, the mother's consideration and care, and this opens up the question of sex-training.

Necessity for Sex-training.—The vast importance of this training for the future of the boy, for his manhood, and for the womanhood he shelters, for his offspring, and for the health and morality of society in general, is so unquestionable that it merits very full discussion.

By sex-training one would imply the imparting of definite sex-knowledge—that is, knowledge of the natural facts concerning the meaning and ultimate intention of sex; and the giving of special education in the laws with which a higher civilisation has surrounded it in the interest of health and morality. If children are to reach the truest manhood and womanhood and to realise their future duties and responsibilities as men and women, such knowledge and training cannot be excluded from their instruction. To those who say that knowledge of sex and its duties belongs to riper years, I

would say that, if we could keep a child in complete ignorance of sex, it might be safe, though not advisable, to let it wait. But we are dealing with developing human beings who possess and manifest sex increasingly as the time goes on, and whom it is not possible to keep without knowledge of it, since through Nature and the outside influences, good and bad, of their larger environment all boys and most girls obtain some degree of it.

The child stands, a little wayfarer on the threshold of an unknown country, and the journey before it is long and full of risks. Have we the right to prevent its receiving the education which will best enable it to preserve itself from these risks and from impure and erroneous views about the great questions of sex? Shall we let the child grope blindly in the dark, and find its way by the unclean misinformation of others to a sex-knowledge coloured by morbid secrecy, embarrassment, and impurity, when we have, as Dr. J. W. Hall says, "the means in our power to present this subject to them in its pure and noble aspect . . . so that they may look upon puberty as a phase of life as sacred as birth or death, as pure as infancy, and upon reproduction as a sacred power"? I believe that if for our children we could lift this question, of such grave import and consequence, from its unhealthy and hurtful concealment into the clear daylight of Nature and reason, we could to a great extent prevent those great social evils which we regret but dare not face openly to-day; which we know to underlie not only the wreckage of much of the nobility and dignity of the manhood of many of our boys, but often irreparable harm, ill-health, and misery, and to compass the ruin, body and soul, of many women.

To mothers, perhaps, especially comes the message, "To cure is the voice of the past; to prevent the divine whisper of to-day."

Method of Sex-training.—The mother should begin her training in the first Nature teaching, when she talks of the "father" and "mother" parts of the plant and the "baby plant," and indicates the way in which it originates (see Chapters XIV. and XV.). She will talk of the "marriage of plants." She will tell the child how sometimes the father and mother live together on one plant, either in one flower, as is most common, or in separate flowers—like the begonias and cucumbers; and sometimes on separate plants, as in mistletoe and hops. How the bright colours or sweet scents of some of the flowers attract the bees, butterflies, and other insects, which

catch the golden dust (pollen grains) from the father part of the plant on their hairy legs and backs, as they dive into the flower for its honey—or in some flowers the wind does the work of the insects—and how these carry it to the mother part of the plant (the *pistil*), to help it to make a little seed, which will grow, as he has watched it grow on his wet flannel and wool, into a baby plant.

When we make practicable a better and more productive system of school education, sex-training will find a natural place in the organised teaching of science, and then the child from eight to fifteen years will be taught at school the natural laws of reproduction through the study of biology, beginning with plant life, continuing through the lowest forms of animal life, worms, fishes, frogs, reptiles, birds, and higher animals to Man. Learning these among the other great natural laws which govern plant and animal life, the child will look upon them from the first as essentially right and natural, and will follow with growing interest, in those “clear eyes of youth” that Homer sings of, the “tracing of the divine law.” Then later he will learn systematically the elementary anatomy and physiology of the human body, and it will not be necessary or customary then, as to-day, when in a few instances these subjects are taught, and in all popular manuals on these subjects, to exclude all reference to the organs of the pelvis and their great functions. This exclusion is wrong, not only because it deprives the child, perhaps especially the girl, of the knowledge essential to healthy living, but leads it to form a wrong conception of these organs and functions; one which inevitably invests them with a sense of shame and guilt.

All such school teaching will, however, be very incomplete without wider satisfaction of the child's growing inner thoughts and questionings, through home training and the suggestion of ideals. When the girl and boy, for whom the idea of sex is dawning with their puberty and their growing knowledge of biology, come and ask the mother questions, she should make them the opportunity for her teaching. She will explain to them the natural laws governing man's existence in this world. Tell them that it depends chiefly upon the two instincts of Self-Preservation—for which we not only work to feed and clothe and shelter ourselves, but also cultivate physical and mental perfection—and Self-Reproduction, without which the human race could not continue, and for which, if only its “Fit” are to survive, we must cultivate these most essentially in the interests

of the generations to follow us. Then she will tell them that they share naturally enough in Nature's great family, and that the girl has the mother organs and the boy has the father organs now ripening for use later in marriage and maturity. Such fuller knowledge of the body cannot rob them of the least degree of æsthetic feeling in the face of the great mystery which envelops the begetting and unfolding of a new human life, but rather must it increase their sense of reverence for it, as a shrine of purity because these powers are God-given, and of beauty because of their divine possibilities. We shall teach them less of the unconvincing, abstract conception of purity than of the living reality of the great duties and powers which sex confers. The boy, with curiosity at rest, will go among other boys with a sense of superiority in the certainty that he knows all there is to know, and the coarse talk of others and their attempts to inform will fail to interest him; and the bond of sympathy between the girl and her mother will be not a little strengthened and intensified.

A difficulty would seem to present itself in the question of the sexual instinct, and, since mothers have raised this question to me in its relation to sex-training, and there seems to be some misconception on the point, I refer to it here. This instinct does not normally exist in the girl in her earlier years. In adolescence it sometimes exists in slight degree, in some cases with and in others without any consciousness of its association with sex, and in either case it in no sense degrades the girl whose mind and companionship are pure. More usually it is not present until it has been definitely awakened by love or marriage. Hence while there need be no suggestion of this to the girl, to whom as a rule her first knowledge of passion will come with her first young love, she can get no more harm, and probably much less, from the sex-knowledge her mother will give her than from that which she will very often get for herself. The mother will best guard the girl's purity by encouraging her absolute confidence, and giving her a high, even exaggerated, ideal of womanly dignity, and by giving her the sound advice—given to his daughters by a brilliant and high-minded man of whom it was said after his death that "he was a leader of men . . . and in private life all a man could be"—never to let a man caress her unless she intends to be his wife. Flirting in itself is often an innocent pastime, but in some cases one could never say

that its effects will be quite harmless; how it may not add to the boy's physical difficulties, or what it may not awaken in the experience of the girl. The mother will not encourage the sweethearting idea, but she will give the girl a high ideal of love, of the friendship and companionship of marriage, and the sweetness and responsibilities of motherhood. The girl who has been taught to "heed the message that her life proclaims to her," whose girlhood is coloured by the knowledge of her great potential power of motherhood, will, I think, never find it in her heart to do anything that might destroy this power, and will carry with her into life and through her life something of the spirit of Nietzsche's ideal of parenthood: "Thou must build upward to a height beyond thyself. But first I would have thee thyself built with a square foundation, body and soul." The mother will, remembering that "masculine and feminine minds naturally attract each other and stimulate each other to new endeavour," with watchful eyes, give the girl free scope and encouragement to mingle with and find some of her best chums and lasting friendships among the opposite sex; as she will also, if she is wise, give her boy all possible opportunity for intercourse with girls, since it is far better that his conceptions of girlhood, at the time when his own sex-consciousness is waking, should be coloured by the correcting and purifying effect of natural contact with such, than by his own imagination and the immature suggestion which may be born of an unnatural isolation from it.

Then later, when the girl reaches the end of her school life and has become familiar with the broad facts of sex, if her mind is healthy and, like her life, well occupied, as it must be if it is to be healthy, the wise mother will—wishing her, with Saint Teresa, to "see life steadily and see it whole"—not seek to hinder the widening of her outlook on life. But rather, adopting the method of an almost perfect mother whom it was the writer's privilege to know, will choose and give her *good* books which will suggest new phases to her, some of them sad and all too common phases of social life, and in answering her questions she will open her heart to pity and tender charity, and thus best prepare the way for later fuller understanding. To do this is not to teach her to condone that which is wrong either in men or in women, but to lay the seeds of that *larger compassion* which must underlie the solving of all human problems, which, as her knowledge of the world grows, will widen her sympathies

with the difficulties and frailties of humanity, and make her womanhood the social force the world needs; which will develop in it, married or single, her best womanly mission, "that spiritual maternity which consists in the taking upon oneself and bearing as a sacred trust the joys and woes of others."¹

In the boy the sexual instinct may exist in a slight degree, though it most often depends on the knowledge which all boys soon get from other boys at school. This is a very important point for mothers to realise, that what she, or, if she finds it difficult, the father, does not tell the boy in the right way, he will learn inevitably and invariably in the wrong way as soon as he mingles with other boys. Boys are eminently sensible beings, and usually characteristically open and candid, and their awakening sex-consciousness, coupled with their observations of animal life, lead them to natural inquiry and discussion. Therefore her talks with her boy, and his father's, when he reaches his puberty, and before if he is sent away to school, must be plain and direct on this subject. They will tell him that the sexual instinct has been given to him not "as an end in itself," but for the sole purpose of reproduction and "for the future life of mankind," and that until he is ready and prepared for this he will harm himself, physically and mentally, if he seeks to arouse it or to gratify it in any unnatural way. They will endeavour to show him, what is true, that it is a mental state and originates through the mind, and that therefore he will help himself by not encouraging it by thoughts, and by using his will to put aside those which will sometimes come to him unsought. They will, as time goes on, put a high ideal of fatherhood before him; show him that the power of creation, which will be his, of conferring life, is a solemn thing and one that involves a knowledge of the influence of his habits of life on the heredity of his children to be.

Just as the mother has guarded him in his childhood from the knowledge or practice of self-abuse, she and his father will discuss this with him now, this unnatural gratification of or desire through curiosity to awaken the sexual instinct mechanically. They cannot hesitate if they realise that he will be almost invariably introduced to this practice when they throw him into a community of other little lads, for whom ignorance has not been, as it never can be in

¹ R. de Maulde la Clavière, "The Art of Life."

sexual matters, innocence ; whose natural protectors have not let them know that to be forewarned is to be forearmed. They will point out that such continued unnatural gratification must lead to the wreckage of his manhood, physically as well as morally ; that he cannot work or play well, nor look his fellow-playmates, girls or boys, in the face if he indulges in the practice, which is wrong chiefly because it is unnatural. There is no doubt that the large majority of those boys who learn the bad habit of self-abuse see the error of their ways and voluntarily leave it off, partly from the decidedly deterrent effect of the accounts they hear of the ills which follow, but also largely because the boy who is thoroughly healthy at bottom develops a wholesome instinct of emulation, and finds distraction in and benefits by the healthy rivalry of school life and games, into the spirit of which, while he so indulges, he finds he cannot enter. Boys who continue this practice usually develop very unstable nervous systems, their lives tend to become unhealthy, and they will shrink from games and sports, cold tubs and healthy companionship, and will often become indifferent to their work, and, losing their sense of self-respect, perhaps become secretive, shifty, and morally weak generally.

Where parents strongly suspect or know that the habit exists, medical advice should be sought, as in the case of the young child, in order to exclude the possible underlying physical cause ; and often a straight talk with his doctor helps the boy, besides tonic treatment which he will probably give him. Daily cold baths are an invaluable aid in the treatment, and he should have plain unseasoned food, no alcohol, if the mistake has been made of allowing him this before, and little red meat. He should eat sparingly at his last meal at night, and go to bed physically tired, should sleep on a hard mattress, lightly covered, and rise as soon as he wakes. Very careful watching will be necessary, besides straightforward discussion and advice. Kindly treatment, persuasion, and sympathy in addition to these will do far more than threats or punishment, and he should be encouraged, even forced, to interest himself in games and outdoor pastimes rather than kept too closely to his school work. Perhaps the best management of all is that of warning an elder brother or friend, who will keep a special eye on him, sleep with him, engage his mind up to the last moment with healthy sporty talk ; see that he takes his cold shower in the morning, and

draw him into his runs, games, and other outdoor exercise. This influence, which is not infrequently felt in such cases at a public school, of the healthy mind of an equal and the competition with the healthy open life of another boy, has a greater effect perhaps than any other method we can adopt.

The habit of self-abuse is not common among girls of a better class and refinement, but it does sometimes exist, and will almost invariably be found to have originated in the influence of some other girl, who may in a school or out of it act as a source of infection to many others, or of a coloured servant. The same unstable nervous system, sometimes excessive emotionalism, irritability or excessive and morbid degree of self-consciousness and shrinking from healthy comradeship, sometimes secretiveness or lack of straightforwardness, is likely to characterise it in a girl. The handling of this girl, who should never be sent to a boarding-school, should consist of *watchfulness* and careful home hygiene. She should sleep with an older person, and rise early, and have plenty of healthy outdoor exercise. Above all, sympathy and straightforward discussion, and interests and hobbies, and active occupation.

The girl will find her best safeguard during her puberty against the inception of hysteria or any other unhealthy mental state in such healthy occupation, physical no less than mental, as will give her a safe outlet for the new mental and emotional activities of this period, and will leave her little time for idle or sentimental dreaming, or for the play of a riotous imagination. Also in her ability to give her mother her complete confidence, and no less in her mother's careful watchfulness of her choice of associates, like the friendships she makes. There is in the girl, as in every natural woman, a strong *besoin d'aimer*, but she not infrequently loves now where love is unworthy, for her criticism lacks experience.

The Care and Training of Nervous Children.—We talk of people in general as being either “phlegmatic” or “highly strung.” To be phlegmatic is to be saved a great deal of trouble in this world, though perhaps the ideal would lie somewhere between the two states. To be highly strung does not mean the possession of weak and unstable nerves, but these are more likely to occur in people so constituted, given conditions of ill-health, nervous shock or strain, unsuitable environment, and, above all, lack of self-control. Hence the training of a child of this temperament is very important, and

the two essentials in it should be the inculcation of self-control in all directions and the avoidance of nervous over-strain. Children with weak and excitable nervous systems often have a nervous inheritance on one side or the other. Those women who know themselves to be of that temperament referred to on p. 12 should, as mothers, do all in their power to promote the development of a healthy nervous system in their children. Although to some extent the tendency to a weak and unstable nervous system is inherited, to a much greater extent it is developed by an unsuitable environment; hence it is possible to do very much to prevent this. A quiet and even pregnancy is a first great essential. The baby's nutrition must be kept very perfect, especially in the direction of good firm fat. Indigestion and flatulence must be most carefully prevented, and also constipation, and the child must be warmly clothed and the extremities well protected. The baby's environment should be particularly peaceful and quiet. His *handling* should be even and firm. Babies are very much influenced by those who handle them, and mothers who are over-anxious and worried, or nurses who are excitable and noisy or hasty make the baby nervous and restless. The child, who will often be especially bright and forward, must not be much talked to and played with by his parents or strangers, nor encouraged to notice and sit up. During teething especially care should be taken to avoid digestive upsets and to ensure the baby's sleep by seeking medical advice if he is much disturbed. The teeth should be very carefully cleansed as soon as cut, in order to prevent decay, which is especially likely to occur in such children, and to avoid toothache later and the necessity for frequent stopping of the teeth.

In the case of the toddling child particular care again should be given to the child's feeding, and a good digestion which can deal with plenty of fat should be ensured. The cold spinal douche should never be omitted, and the temperature of the child's baths, if his skin is warm and glowing after them, should be gradually lowered till at eight years he has them cold. The long midday sleep should be an invariable rule, and continued as long as possible. The child should be put to bed early, and his sleeping-room should be well darkened to avoid too early waking. He should have plenty of fresh air by day and by night. From the very beginning his little aches and indispositions should receive as little attention

as possible. Such a child will often learn to vomit very easily after one or two attacks of stomach upset or doses of unpleasant medicine; hence improper articles of food should be carefully avoided. Medicine should be sweetened and flavoured and coloured as effectually as possible, and when refused should be given promptly in the manner recommended under *Administration of Medicines*; and vomiting in the absence of illness should always be quickly checked.

As the child grows to understand, which he will very early, his indispositions should never be discussed before him, nor those of other people. He should be taught endurance, encouraged by all possible means to take a pride in enduring his aches and tumbles bravely. His temperament should be carefully studied and its special difficulties met. He will often be more difficult to train, but probably tender and affectionate, which will give the mother much opportunity, and compensate for this. Exciting or harrowing stories and scenes should be consistently avoided, and parties and pantomimes should be of rare occurrence. He should spend as much time as possible in the country rather than in town, and at all times should be much out of doors. He should always be warmly clothed with wool or silk and wool covering his skin, and his feet and hands should be kept warm in cold weather. His school life should be delayed at least until he is eight years old, but he may well after his sixth year be given such little home lessons as are suggested in Chapter XV., since he very essentially needs occupation.

In the case of the school child over-pressure must be most carefully avoided. Home-work must be cut down to a minimum, and an abundance of sleep should be ensured. The feeding should be especially nutritious, including plenty of milk, cocoa, and chocolate, eggs and Plasmon, and, *if the digestion is good* and the tongue clean, cod-liver oil and malt may very advisably be given. Tea and coffee should be used in very strict moderation. Warm underclothing should be worn at all times, and warm feet at night should be ensured by the use of a hot-water bag. Supper should be a light and easily digestible meal; lessons should be stopped at least an hour before bed-time, and a warm milk drink should be given before the child goes to bed.

During adolescence, as stated previously, the mind undergoes

a great change, and the effect will often be more apparent in such children as we are considering. The ideals put before them should be those of self-forgetfulness and self-control. Lapses into egotism, such as a tendency to vanity, or constant and overweening desire to produce an effect which is striking on others ; an excessive tendency to self-consciousness, shyness, or want of self-confidence ; a tendency to depression and self-pity ; a tendency to over-exaggeration of physical ills, and a craving for sympathy and attention must all be pointed out, and checked by ensuring suitable conditions, and, as far as possible, by enlisting the child's own efforts. A lapse into excessive emotionalism, such as emotional outbursts on slight provocation, or an excessively sentimental or morbidly sympathetic way of looking at things, must be met by essentially matter-of-fact handling and treatment ; by pointing out the necessity for control of the emotions and the inefficacy of undisciplined sympathy. By encouraging the girl to be more like her brothers in these respects, and warning her against what are essentially womanly weaknesses, and by giving her, as far as possible, sensible and level-headed companions of the opposite sex, and cheerful companions of both sexes, and by tactfully discouraging "bosom friends" and excessive novel-reading.

In all these cases the mind should be well and congenially occupied, and plenty of muscular exercise daily in the fresh air should be ensured. The end of school life should see the beginning of a busy and active life filled with work which is congenial, for the girl no less than for the boy.

The handling of these children has been referred to under *Infant Management*, *The School Age*, and during puberty, but its importance is sufficiently great to warrant its summing up here.

Hysteria.—Hysteria is the name given to a peculiar mental state, and as it is not uncommon for girls of highly-strung, nervous or excitable habit or parentage to pass through a phase of it in a slight or severe degree during puberty or adolescence, it is of the greatest importance that mothers should have a definite conception and knowledge of it.

It must not be looked upon as the manifestation of any vicious, evil or wicked tendency in the girl, though moral weakness is often the most striking feature of the condition as we see it, nor must it be thought to show a tendency to insanity, which in its severer

forms it might easily suggest to a lay mind. It may be looked upon as a passing unsteadiness of the nervous system through which the higher self-control is markedly lessened. The mind then becomes unhealthy, self-centred, and egotistical, a prey to abnormal suggestions and imaginations, and the thoughts it conceives and actions it initiates are unreal. The girl as the result craves sympathy and attention and has imaginary woes and ailments, or is the heroine of unreal situations in her desire to satisfy this craving. We must look upon her as ill in her nervous system, and cannot look upon her as *responsible for the craving* the results of which we see and call hysteria. Given the right handling and treatment, especially at this early age, no nervous disorder is more hopeful of complete cure, and if mothers could fully understand and realise this we should less often hear the statement in medical circles that "the patient must be removed from her friends and placed in the care of strangers." In those cases of hysteria which I have encountered I have ascribed their complete cure chiefly to the mother's co-operation and judicious handling. If not suitably treated, the tendency often grows and may with maturity come to be a fixed habit, when we have as the result the typically "hysterical woman"; of weak moral sense, weak will, uncertain of her nerves, her temper, her emotions, without self-control, without endurance of her real ills, physical or mental, the consideration and discussion of which becomes a constant necessity to her, and in their absence of imaginary ones.

The hysterical tendency may exist in a very marked or in a very slight degree, and the form it takes is very varied, and hence the symptoms of it are many. Hysteria may simulate disease: the girl may develop a constant cough, lose her voice, or the use of her legs; frequently produce vomiting or retching, or refuse food to the point of starvation. It may take the form of attacks or fits either of excessive laughter or crying, or of twitchings and throwing herself about, or of imaginary faints; but consciousness is never lost in these as in true faints or fits, and the girl recovers quickly if left to herself and told that the attacks are unreal. In all such cases medical advice and discrimination will be necessary to establish the diagnosis. The stress of the disease, on the other hand, may fall on the mind, and these are perhaps the most difficult of all cases to deal with, because in less severe forms they are not

so readily recognised. The girl may show a tendency to exaggeration and over-colouring of statements, written or verbal, especially bearing on herself. She may, in the absence of any real trouble, or after some bereavement, become very morose and filled with self-pity. There would seem often to exist in girls with hysterical tendencies a habit of excessive and unjustifiable extravagance, either in the direction of excessive and usually unsuitable personal adornment, or wasteful and unnecessary gift-bestowing. The girl may even steal without any need or reason. Hysteria underlies, there is little doubt, many police court cases where refined women in good circumstances are brought up on charges of petty theft, or such thefts in institutions and schools.

The treatment of hysteria is both physical, mental, and moral, but the essential of it is to develop the girl's own *will*, her power of controlling her own mind in a healthy direction. It is important to remember that while we think of hysteria as a disease, it differs from other diseases in that the patient must be led to cure herself. The girl's health must be kept at a high level, and here the advice of her doctor may help the mother. She must have, and *be made to eat*, plenty of nourishing food, must have plenty of fresh air by day and night, and plenty of sleep. Her bowels, especially in cases where depression is a marked feature, should be kept well opened daily. She must have abundant outdoor physical exercise, and nervous over-strain or excitement of any kind should be as far as possible avoided.

It is usually particularly difficult to get such a girl to apply herself to good steady work, but the accomplishment of this is a very large factor in her successful treatment. She should never be sent to a boarding-school. Her school work, if she is still a school girl, must be supplemented by such hobbies and interests as will use up to the full her mental energy and crowd out morbid thoughts. Her literature must be carefully supervised, and the morbid, unhealthy type of modern novel carefully excluded. Her associates must be most carefully watched, and hero worship and "bosom friends" and all confidences discountenanced. The mother can have no real influence over the girl if another influence emanating from another girl, who does not understand or often suspect her condition, and to whom it would rarely be wise to confide it, is holding her, and, perhaps unwittingly enough, pandering to and encouraging the girl

in the tendency we are so anxious to eradicate. The mother's attitude must thus be one of constant watchfulness, for she cannot trust the girl, though she must not let her live in an atmosphere of mistrust and disapproval or know to what extent she is not trusted. The condition, my experience has led me to think, is much better discussed with the girl in all cases—that is to say, the particular pose or poses, the unreal speech or actions she indulges in; not the disease itself and its nature, nor at any time the fact that she is not held entirely responsible for it. She must be told that her cure is a certainty, but depends upon herself. In the two worst cases I have met with the condition was discussed with the girl on the above lines both by her mother and her doctor; she admitted it, and her cure in each case began to be apparent from that date. Both these girls, who were between the ages of fourteen and eighteen years, are now healthy, happy, and busy girls.

The sense of confidence in the mother's sympathy and her love and tenderness is a very essential condition in the successful treatment. The girl's ailments and those of other people should be discussed as little as possible with her. Ideals should be presented to her of *self-forgetfulness*, unselfishness, and of activity of body and mind, enthusiasm, and progress. She should, in short, be allowed no time for introspection nor opportunity for posing in any rôle or unreal situation, and again, one must repeat, every effort should be made to strengthen her own will, and to put her in a position to cure herself, by suitably modifying her environment and influencing her aright.

It will be very necessary for the mother who has a picture of hysteria in her mind to guard against the easy and not uncommon though cruel mistake of ascribing real physical ills to this condition. For this reason medical advice will always be necessary whatever the mother's suspicions before she can ascribe symptoms of disease to hysteria.

She must also never confuse it, in the case of older daughters who perhaps come beyond the scope of this book, with the attacks of "nerves," or conditions of depression, want of self-confidence, and unfounded apprehensions, which belong to a temporarily tired or weakened nervous system. These cases are very different and require different handling and very essentially need medical care. The whole question of the nervous system, the relation which

various diseases may bear to it, and the disorders to which it is liable, and their effect on the temperament and the daily conduct of the individual, covers a very large field, and any mother who feels that there is anything abnormal in the nervous system of her child will do well to refer it to her doctor.

Motherhood is a comprehensive title, covering, as it must, the needs and special characteristics of each phase of the child's unfolding life. The needs of infancy are very different to the needs of adolescence, with its new birth of individuality, its wider outlook, new interests, and new ties. Practical motherhood to a great extent comes to an end with the termination of the school period, and sooner or later the girl and boy go forth into the world to face their own difficulties and to find their own joys, to solve their own problems, and to set their own brick in the edifice of Life.

We hear much in these modern days of social problems, not only of national degeneracy but of the necessity for reorganisation of the relation of the sexes, and for the appreciation and extension of the "rights" of women. Perhaps these vexed questions will find their best solution in the truer understanding of one sex—of the special characteristics of each in their highest possible degree of development and expansion, and of the duties and responsibilities which belong to them—by the other.

Modern economic pressure and the complex social conditions which are following in the wake of the gradually progressive work of evolution make the position of women to-day a difficult and perplexing one, to which few can remain indifferent, though some may prefer to look on in a passive rôle, while others seek to grasp and wrestle with its problems. Woman, like man, in the plan of evolution works out her own salvation, and she makes a legitimate claim to this right; but she will do well, as she finds the wings that bear her to greater freedom, not to lose faith in the power of her womanhood, and to remember the new-old advice of Nietzsche: "I will that thy victory and thy emancipation shall yearn for a child. Living memorials shalt thou build for thy victory and thy emancipation."

If the above is the true solution of this question of far-reaching consequence to our nation, its seeds must be sought, like many others in the first home environment and training, and our children must be educated and equipped to solve the problems of to-day.

Yet one word of farewell I would leave with mothers, and that is that *all children should be taught by their parents, in season and out of season, that LIFE IS GOOD through and through.* This is, I think, what Science teaches us to-day, for God's air is good to breathe, and all our environment is sweet and wholesome. Its impurities and imperfections are due to erring human agency, imperfect adaptation, and as yet imperfect human knowledge: "The evil is null, is nought, is silence implying sound," and in a pessimistic age it is good to show our children this.

APPENDIX

1. *Raw Meat Juice*.—Take a quarter of a pound of lean juicy steak, free from fat ; mince finely with a knife and fork and place it on a piece of muslin in a basin. Pour on to it two tablespoonfuls of cold water. Cover and stand for from half to one hour, on ice if possible ; if not, in a basin of cold water in a very cool place. At the end of this period squeeze out all the meat juice from the meat into the rest in the basin, by twisting the ends of the muslin tightly. More juice will be obtained if a press is used to extract it (see *Meat Juice, Cooked*). The juice very soon decomposes, and in such a state is very dangerous ; hence it should be constantly made fresh, none being used which is more than at most two hours old ; and it should be kept very cool, if possible in ice, and not exposed to sunlight.

Raw meat juice is sometimes ordered in cases of scurvy or rickets when it is necessary to supply fresh elements in the diet ; in cases of great digestive delicacy, or feebleness in convalescence from acute illness, or in cases of wasting ; or in such illnesses as diphtheria and others where very strengthening and easily digestible nourishment is required. It can be warmed to the required temperature for feeding for infants, but should never be heated above this temperature, and for older children will usually be given cold or iced. It is always given *well diluted* to infants, and the strength should always be regulated by the doctor. I would advise mothers never to give raw meat juice to children in the absence of the doctor's orders ; giving cooked meat juice in ordinary cases, and to healthy children.

2. *Raw Meat Pulp*.—Take a piece of juicy, well-hung steak, preferably fillet, or tender juicy mutton. Remove all fat and gristle. Scrape away the pulp with a blunt knife ; or else shred finely and then pound well, preferably in a mortar with a pestle, advisably rubbing through a hair sieve afterwards. The colour and taste of raw meat being objectionable, these must be covered as much as possible for children. For infants, this pulp, if ordered by the doctor, will usually be given rubbed up to a thin cream with milk, and well sweetened ; and in such case it should always be scraped. For older children it may be given seasoned with pepper and salt, and spread between thin slices of stale bread and butter, or sometimes a sprinkle of white sugar will be preferred. It may be rolled into balls and lightly grilled, after flavouring with pepper and salt ; or it may be given as a jelly—the meat pulp being added to some ordinary fruit jelly, especially a red jelly, when this has well cooled ; the jelly then being allowed to set in the ordinary way.

3. *Bread Jelly*.—The bread jelly, for which the recipe is given in Chapter VIII., is usually used for infants in the proportion of one full

teaspoonful to every two ounces of hot water. This mixture with white sugar added (see *Sugar*) is sometimes a very useful and easily digestible food when it is necessary to avoid milk, and as the child improves, milk may be gradually added to it, beginning at first with a teaspoonful. The addition to the bread jelly of raw meat juice and cream is sometimes ordered, and the following mixture is often very useful :—

Bread jelly	3	teaspoonfuls
Raw meat juice	2½	teaspoonfuls
Cream	2	teaspoonfuls
Cold water	2½	ounces

Sugar may be added, 1½ teaspoonful to the above (3½ oz.) mixture.

Bread jelly forms a nutritious and easily digestible food for older children in most illnesses. It should be flavoured with lemon rind or lemon essence in preparation, and given with milk and cream, which last may be whipped.

4. *Milk Jelly*.—Milk may, in most illnesses, be given in the form of jelly, and this sometimes forms a useful change. It should, in such cases, be well flavoured with vanilla, lemon rind, stewed in the milk, or lemon essence. Cream may often advisably be added in the preparation of the jelly, or given whipped with it ; and the jelly may be coloured pink with cochineal, in whole or part.

Soak about half an ounce of Nelson's gelatine (rather more in hot weather) in water till soft. Pour on to it a pint of sweetened and flavoured milk, which has just come to the boil. Stir until gelatine is dissolved, and do not pour into wetted mould until mixture is beginning to thicken.

This jelly may be flavoured sometimes by one or two tablespoonfuls of grated chocolate or cocoa, previously mixed with a little cold milk and boiled for five minutes before adding it to the rest of the milk ; and sometimes a little strong coffee may be used for flavouring.

5. *Custard Sponge or Honeycomb Cream*.—Soak one ounce of Nelson's gelatine in a pint and a half of milk, sweetened to taste, until soft. Put these into a double saucepan and heat gently till the gelatine is dissolved, but do not get too hot. Add the yolks of three eggs well beaten, and bring to the boil, stirring all the time. Remove from fire and add a small teaspoonful of vanilla. When cooled a little, add the whites of the eggs beaten to a stiff froth. Stir in well and pour mixture into a wet mould ; turning out when set. This dish will be allowed in many cases of illness as part of a milk diet, and is much appreciated as an ordinary sweet or party dish.

6. *Savoury Custard*.—Beat an egg in a basin ; add a teacupful of broth (see *Broth*) or of beef-tea (see *Beef-tea*) ; flavour with salt and pepper, and pour into a buttered breakfast-cup or small basin. Tie on a buttered paper cover. Place in a saucepan with water half-way up the cup or basin, or in a steamer, and steam gently on the side of the fire till set. This is often appreciated by older children as a change from sweet custard.

7. *Broths and Beef-tea in convalescence* may be rendered nutritious by the addition of cream (half to one small teacupful to the pint of soup) or milk and the beaten yolks of eggs (about two to the pint). The soup

should be stirred over the fire to cook the eggs, but should not be allowed to boil or the mixture will curdle. The soups may often be thickened with a tablespoonful or so of fine soaked sago, or, better, farina or farola, boiled in the soup for the length of time recommended in the recipes for puddings prepared from these.

8. *Steamed Fish or Mutton Cutlet*.—Well butter two plates. Place fillets of sole, or plaice, or haddock, or a whiting on one plate. Sprinkle with lemon juice, pepper and salt. Cover with the second plate, and steam over a saucepan of boiling water till done. Serve with cream (heated) poured over, or a simple butter-sauce; and sometimes, if allowable, parsley sauce. Cutlets, or rounds of fillet steak, may be steamed in the same manner and served with a little good gravy. These form nutritious and easily digestible dishes when fish and meat are allowed in convalescence.

9. *To Boil Rice, Dry, as a Vegetable, &c.*—Use Patna rice. Wash in several waters (cold) until water is clear. Drop into a *large quantity* of *boiling* water and boil fast for ten or fifteen minutes. Watch, and remove a little rice in a teaspoon to test, when grains are swollen; remove when they are tender but separate and unbroken. Turn into a colander by means of a fork, and at once run clean water through to wash rice. Then place colander over dry saucepan and leave by fire to dry, or spread out rice on large meat-dish in oven.

Eggs and Tomatoes.—Stew sufficient tomatoes; strain them and use pulp and juice, adding pepper and salt, and plenty of butter; a pinch of sugar also should always be added when stewing the tomatoes. Stir in the eggs, well beaten, and remove when the mixture begins to thicken, and serve at once, either on boiled rice or buttered toast.

A Simple Risotto.—Prepare tomatoes as above, flavouring with a small bay leaf, squeezed onion juice, pepper and salt, and adding butter, and pour over boiled rice piled up on a hot dish. Sprinkle whole thickly with grated cheese; and either serve thus or brown in oven, as preferred. Macaroni may be used in the same way.

10. *Fat Whey (Dr. Ralph Vincent)*.—Add one teaspoonful of rennet to one pint of uncooked, whole milk. Heat till just warm (100° F.). Keep at this temperature, that is, just warm, *stirring with a large spoon all the time the curd is forming*, but do not overheat. When it is fully formed press the curd gradually down till it forms a tough lump at the bottom of the saucepan. Pour off the whey, and then heat it as described on p. 220. The addition of milk, when the whey has cooled, renders it a very suitable food for infants, especially during the earlier months of life. By this method all the valuable constituents of milk are made use of, and there is no need to add cream or other fat. For a young infant the mother may give (making up the feeds to the size suitable for its age) one part of milk with seven parts of whey, and then gradually increase the proportion of milk (1 to 6, 1 to 5, 1 to 4, 1 to 3, 1 to 2, and 1 to 1) as the child grows older. Or she may use the whey instead of barley water to make up the cow's milk feeds, for the earlier months of life especially, using half the sugar and *decreasing the milk strength* (see p. 145) if necessary.

11. *Fruit Moulds*.—Any fruit may be used, such as raspberries, gooseberries, currants or strawberries or cherries (usually about a

pound), or apples (about a pound), bananas (six ripe ones), or prunes (about a pound), or rhubarb or oranges. The apples and oranges should be sliced (cores and hard white skin being removed), the bananas mashed and pounded to a pulp, and the prunes prepared as for prune pulp (see *Recipes*). Stew the fruit until soft, adding sugar to taste; the apples should be flavoured with cloves and lemon juice, and the bananas with three teaspoonfuls of lemon juice. Add about half a pint of water to the apples and bananas, and a pint to the prunes; but not more than a teacupful will be necessary for the other fruits, if cooked in an enamelled double-saucepan. Soak one ounce of Nelson's gelatine in a little water till soft. Rub the fruit (except the banana) through a hair sieve. Make the resulting juice and pulp up to a pint with cold water. Put this with the gelatine into a saucepan and heat gently till gelatine is dissolved; then remove from fire. The stiffly whisked whites of one or more eggs may advisably be added (well whisking them in) when mixture has cooled a little. Pour into wetted mould and turn out when cold. Sago, threequarters of a teacupful, or two tablespoonfuls of corn-flour, may be used instead of gelatine, when both should be cooked with the fruit juice and pulp for the length of time recommended under recipes for puddings prepared from these. The banana mould is nutritious and may be made with milk. The moulds may sometimes be coloured with cochineal or carmine vegetable colouring. Much appreciated apple, strawberry or banana "charlottes" may be prepared by lining the moulds with delicate finger-biscuits, or sponge fingers, and pouring the mixture into this; and if whipped cream is added just before turning it in, or used to fill the centre of a *border* mould, the mould will be richer.

Fruit and Bread Mould.—Well line a basin with slices of stale bread half an inch thick, with crusts removed, cutting out a round for the bottom. Stew sufficient raspberries or red and black currants, or strawberries, or a mixture of these, to fill the basin—with plenty of sugar, until done. Pour the fruit and some juice *hot* into the basin, filling it up to the brim. Cover well and completely, well above the brim, with more slices of bread. Place a plate or saucer over the basin with a weight on it, and when cold and the bread well soaked, turn out and serve with milk or cream.

These fruit moulds, prepared with gelatine, sago, or bread, form suitable summer sweets during the school age; and the two former may be given to younger children.

12. *Cooling Drinks.*—Sliced oranges, or apples, bruised grapes, cherries, or strawberries prepared as lemonade (see *Recipes*), with boiling water poured on to the fruit and plenty of sugar, and the liquid strained off, form useful drinks during hot weather or feverish conditions. Prune juice (2 oz. of prunes simmered with sugar in a pint of water for an hour and strained) has a useful slight laxative effect.

13. *To Make Good Coffee.*—Obtain recently roasted berries, in small quantities, frequently, and use a coffee mill, grinding coffee as required. If berries are put into a hot oven for a few minutes, aroma and flavour will be improved. Use the coffee in the proportion of a *heaped* tablespoonful to each breakfast-cupful of water used, and a heaped tablespoonful over. Put water into a good-sized, perfectly clean, enamel-lined saucepan. When just about to boil, throw in coffee, stir, and *allow*

to rise twice. Then pour whole into a good French *cafetière* (such as Hutchinson's Patent, obtainable, with a reserve supply of lint strainers, from the Army and Navy Stores, and Whiteley's, London), having rinsed pot with boiling water. Stand by the fire for five minutes, and then strain.

The following recipes are inserted additionally, by request, the preceding being already in press.

14. *Egg Jelly*.—Soak $\frac{3}{4}$ to 1 ounce of Nelson's gelatine in a little cold water. Squeeze the juice of two lemons into a basin and make up to a pint with water. Well sweeten to taste. Beat two eggs, and put these with the gelatine, lemon, &c., into an enamelled saucepan. Stir well till thoroughly hot and gelatine dissolved, but do not allow to boil. Strain and pour into a wetted mould. This jelly is nutritious and usually allowable during a milk diet.

15. *Plasmon Custard*.—Dissolve two teaspoonfuls of Plasmon powder in a breakfast-cupful of tepid milk in an enamelled saucepan. Boil over the fire for two minutes, stirring well. Set aside to cool slightly. Add one or two beaten eggs. Sweeten, and flavour with vanilla. Pour into a buttered mould, and steam gently till custard is set.

16. *Chicken for an Invalid*.—Heat some cold chicken, cut up or jointed, with lemon rind, a *soupeçon* of onion juice and sufficient stock to well cover it. Add a little butter, a dash of nutmeg and pepper, and a little tomato sauce or mushroom ketchup. Set aside, and stir in one or two well-beaten eggs. Stir, to thicken, but do not boil. Uncooked chicken may be used in the same way, simmered till tender.

N.B.—Onions should not be given to children at any time, fried or partially cooked. They should be given boiled until quite soft, or, if used for flavouring, a very little of the juicy pulp should be scraped away with a knife from the cut surface of an onion.

17. *Fish and Cheese Pudding*.—(1) Boil and drain sufficient rice. Remove skin and bones from remains of cold white fish. Make a butter and cheese sauce as for *A Good Cheese Pudding* (which see). Pour this over alternate layers of fish (over which a few drops of lemon juice should be squeezed to improve flavour) and rice in a buttered pie-dish. Sprinkle with bread crumbs and grated cheese, and brown in the oven.

(2) Boil and drain sufficient rice. Put prepared remains of cold boiled fish with the rice into an enamelled saucepan, with plenty of butter. Add seasoning of mustard, pepper, salt and nutmeg. Stir well, and, when thoroughly hot, stir in three or four ounces of grated cheese. Place on a dish. Sprinkle with bread crumbs and cheese, and brown in oven.

18. *Cheese Pudding*.—Mix a teacupful of grated cheese and a teacupful of grated bread crumbs well together with the yolks of two eggs, beating all well together. Season with pepper and salt and add sufficient milk or cream to moisten mixture. Then mix in the whipped whites of the eggs. Bake for half-an-hour, browning well.

19. *Cheese Custard*.—Beat two eggs. Pour on them two breakfast-cupfuls of boiling milk. Add four or five tablespoonfuls of grated cheese, pepper, and salt. Pour into buttered cups or mould. Steam gently in

al steamer, or in a saucepan with water well up round the moulds, till custard is set. Stir mixture well at first.

20. *Cheese Potatoes*.—Bake three large potatoes. Cut them in half. Scoop out the insides. Mash this well and mix with an equal quantity of grated cheese, a teaspoonful or so of finely chopped parsley, pepper, and salt, and a *souffçon* of scraped onion juice and nutmeg. Mix with a beaten egg and a very little milk. Fill the potato skins with the mixture. Brush the tops with egg and bread crumbs. Bake in oven till nicely browned.

21. *Kedjeree*.—(1) Boil sufficient rice, dry. Remove bones and skin from cold boiled fish and mash well. Chop up as many hard-boiled eggs as desired. Put some butter into a stew-pan, add fish, rice and egg, a little nutmeg, or mixed spice, pepper and salt. Warm thoroughly, stirring well.

(2) Put boiled rice, fish and butter into the saucepan with seasoning and flavouring as above. Add as many eggs as desired well beaten, stir until eggs are just set, and then serve.

22. *Pilau*.—(1) Use a large flat enamel-lined stew-pan. Joint a fowl. Fry in a little butter in the stew-pan with two ringed onions. Add stock or water to well cover fowl and a slice of lean bacon, and simmer gently till done. Boil some rice dry and pile on a hot dish. Lay fowl joints on it. Add a tablespoonful of butter to the stock, about a teaspoonful of grated lemon rind, and a dash of nutmeg, pepper and salt, and a squeeze of lemon juice or a little tomato sauce. Pour the sauce over the rice and fowl, and garnish with ringed hard-boiled eggs.

(2) Stew fowl as above, adding (tied in a muslin bag) a small stick of cinnamon, a few cloves and pepper-corns, a bay leaf, and a tiny morsel of mace. Add rice at a suitable time before serving to get it well cooked, but not "mushed." Add butter just before serving, and garnish with ringed eggs.

Veal or mutton may be used instead of fowl. If cooked fowl is used, it should be simmered in the stock with flavouring as above, and a *souffçon* of onion juice, butter being added before serving. The rice should be cooked separately, and added before serving, or served separately as in method (1).

23. *Timbale*.—Mince up remains of cold poultry or fish. Mix with a teaspoonful or two of lemon juice and of finely chopped parsley, pepper and salt, and cream or butter. Nutmeg may be used instead of parsley for poultry. Add a beaten egg and sufficient *hot* milk to moisten mixture. Well butter a cup or mould, and line with boiled macaroni. Fill with mixture. Tie on a buttered paper cover, and steam for one hour. Serve with white or brown sauce.

Recipes Nos. 17 to 23 form suitable supper dishes during the school age, also those recipes given under Recipe No. 9.

24. *French Steamed Rice Mould*.—Boil a teacupful of rice in half a pint of water and half a pint of milk. Add two ounces of raisins, or, better, sultanas, two ounces of brown sugar, one ounce of chopped candied peel, two ounces of butter, and a beaten egg, stirring all well. Pour into a well-buttered mould and steam for three hours.

25. *Sago and Fruit Mould*.—Soak a teacupful of fine sago in a teacupful of water. Put on about a pound of fruit (currants, straw-

berries, raspberries, gooseberries, or any of these mixed, or rhubarb) with a teacupful of water in an enamel-lined saucepan, and stew the fruit till soft. Force the fruit through a hair sieve, getting the pulp and juice, and leaving behind skins and seeds. Make the pulp and juice up to one pint with cold water. Return to a clean double saucepan, with sugar to taste, and the soaked sago. Simmer, stirring now and then till the sago is quite transparent. Add a little hot water if too thick, and more sugar if necessary. Pour into a wetted mould, and turn out when set. Serve with cream or milk.

26. *Simple Party Dishes.*

(1) *Fairy Island*.—Bring a pint of milk to the boil in a double saucepan with sugar to taste. Mix two tablespoonfuls of corn-flour smoothly with a little cold milk; stir into the boiling milk, and boil for twenty minutes. Set aside to cool a little, and then stir in the beaten yolks of two eggs, with vanilla to taste. Bring again nearly to the boil, stirring well, but do not allow to boil. Pour a little into a basin and colour pink with cochineal, or Mrs. Marshall's carmine vegetable colouring. Fill the top of a wetted mould with this, then pour in the white mixture. Make a boiled custard—two eggs or more to the pint of milk, with sugar and vanilla to taste. When the mould is set, turn out into a glass dish. Pour the custard over. Dot custard with the stiffly whisked whites of the two eggs, coloured pink, or else with whipped cream coloured pink; and sprinkle the whole with "hundreds and thousands," or crystallised rose petals.

(2) *Moonshine*.—Bring a pint of water to the boil in a double saucepan. Stir in two tablespoonfuls of corn-flour, previously mixed to a smooth paste with a little cold water. Boil for twenty minutes, with sugar to taste. Pour into a large basin. Add vanilla or lemon essence to taste. Whisk well in the whites of two eggs previously whipped to a stiff froth. Pour into a wetted mould. Stand the mould in a steamer and steam for ten minutes. The mixture should rise well, and be very light and spongy. Make a boiled custard with the yolks of the eggs and half a pint of milk, flavouring as mould, and sweetening to taste. Pour over mould when turned out into glass dish.

(3) *Snowballs in Snow*.—Soak a small teacupful of fine sago in a teacupful of cold water. Boil the sago, or rather more than half this quantity of farina, with sugar to taste in a pint of milk, part of which may advisably be cream, till thoroughly cooked—sago till quite transparent, and farina for one hour. Soak one ounce of Nelson's gelatine in a breakfast-cupful of milk. Heat in a saucepan till gelatine is dissolved. Pour the sago or farina, when cooled a little, on to the gelatine, stirring well. Pour into wetted darioles or small coffee cups. Turn out, when set, on to stiffly whipped cream or white of egg, in a glass dish. Dot each snowball with whipped cream or egg. May be decorated with silver sweets, and dish set in silver paper frill. Ground rice may be used instead of sago and gelatine, the stiff whites of two eggs being whipped in after mixture has cooled a little, and well beaten with it before pouring into mould. Use same quantity of ground rice as of farina, and boil for twenty minutes.

(4) *Bird's-nest Jelly*.—Soak an ounce of Nelson's gelatine in a pint of good coffee, milk and cream. Put it into a saucepan with sugar

to taste. Heat slowly, stirring well, till the gelatine is dissolved. Pour the jelly into a round border mould. This will form the nest. For the eggs: crack the extreme tops of about six eggs, round with a knife, cut off the tops and remove contents (or use breakfast egg-shells). Wash out shells and fill with cold water and stand in egg-cups. Soak in a small basin half an ounce of Nelson's gelatine with a teacupful of cold water. Then heat the gelatine in an enamelled saucepan with white sugar to taste and three teaspoonfuls of lemon or orange juice, till gelatine is dissolved. Divide mixture into four portions in four cups, and colour separately with cochineal (or carmine), saffron-yellow, sap-green, and violet ("purvio").¹ Then pour away water from egg-shells, and fill these with the jelly mixtures. Soak a small half ounce of gelatine with a teacupful of milk or cream. Heat in an enamelled saucepan, with sugar and vanilla essence to taste, till gelatine is dissolved. Pour this mixture, uncoloured, into the remaining egg-shells. When jellies are well set, turn out the border mould, and peel off the egg-shells. Place the eggs in the nest and decorate with foliage.

(5) *Fruit Baskets* (Mrs. E. W. Kirk).—Take as many oranges as required. Make into "baskets" by removing two pieces of peel from the top, leaving a strip across for the handle. Remove the inside of the oranges. Fill the orange cases with variously-coloured jelly, and allow to set. Dot with angelica and crystallised cherries, and decorate with holly or other leaves.

27. *Orange Whey*.—Add the juice of one or two oranges to a pint of uncooked milk in an enamelled saucepan. Heat slowly till good curdling takes place, strain, sweeten if necessary, and drink cold. This forms a pleasant drink during feverish conditions.

Oranges (after removing hard white skin and pips, and cutting in thin slices) mashed with milk or cream and sugar, form a good summer dish for children, with an exceptionally rich flavour.

28. *To Cook Chestnuts*.—Prick the nuts; drop them into boiling water and simmer for a few minutes, and then remove shells and blanch like almonds. Simmer the chestnuts in water or stock as required—about an hour usually—until quite soft. The whole nuts may then be used, or the pulp resulting on passing these through a sieve. The whole nuts may be eaten as a vegetable, simmered in stock or milk, with butter and thickening added at the end; or served with white sauce; or they may be eaten in the Italian fashion, mashed with butter or cream. They may be simmered in soups. The pulp may be used to thicken soups, or make purées, and excellent white soups may be prepared with this, white stock, cream and spices.

¹ These vegetable colourings are obtainable from Mrs. A. B. Marshall's School of Cookery, 30 & 32 Mortimer Street, Cavendish Square, London, W., or from the larger stores.

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